THE IRON TRADE REVIEW

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Independents May Enter the Export Field

Formation of Corporation for Foreign Business Being Considered—Idle Plants Resuming—Heavy Specifying Continues

Heavy specifying against contracts, increased furnace and mill activities, especially on the part of the Steel Corporation, and a fair amount of new business furnish strong indications that, after the lull of the last few weeks, the iron trade is preparing to go forward at a very satisfactory rate throughout the first half of the year. With the resumption of the Corporation plants at North Sharon and Columbus, the Carnegie Steel Co.'s idle furnaces will be a few isolated stacks which are operated only in times of great prosperity. The Corporation's general operations are now from 80 to 85 per cent of capacity and the outlook is that, with the improvement in business which can usually be counted upon with confidence in the spring, mills of the Corporation will not be able to give prompt deliveries. With some of the independent companies, improvement has not been rapid, and in eastern territory especially, the change for the better is slight.

Exports

An important reason for the Steel Corporation being able to make a better showing than many of its competitors is that it has been enjoying an increasingly important export business, while the independent companies have been doing practically nothing in foreign orders. The independents recognize that they are entirely without the organization necessary to carry on an export business and now have under consideration the formation of an export corporation to handle the foreign business of their companies somewhat after the manner of the United States Steel Products Co., the export subsidiary of the Corporation. Leaders among the independents are giving more thought than ever before to the possibilities of the export trade. In addition to other sales of pig iron for export recently noted, it is reported that 25,000 tons have been sold to Austrian consumers.

Iron Ore

Eastern Pennsylvania furnaces have closed for a portion of the tonnage of Bessemer ore on the south coast of Cuba, offered by the Ponupo Manganese Co., at 7 cents per unit, Philadelphia. The sales and quotations are for the first half of the year, the company offering 15,000 tons per month, or about 180,000 tons annually. This ore was formerly taken by the Pennsylvania Steel Co. and the Maryland Steel Co., which will not purchase it during 1912.

Railroad Buying

Railroad business develops rather slowly and the rail tonnage being placed is disappointing. Although official information is withheld, it is understood that the New York Central's rail order was for only 115,000 tons, although it had confidently been expected that the order would be 180,000 tons. The New York Central tonnage was divided into 47,000 tons to the Corporation, about an equal tonnage to the Laekawanna Steel Co., and smaller tonnages to other companies. The Pennsylvania rail order has not yet been placed. Owing to the tremendous increase in steel rail capacity within a few years, and with the rail mills at Gary and South Chicago idle, railroads see no necessity of hurrying their placing of orders. The order of the Chicago & Northwestern for 60,000 tons of rails, heretofore reported, has been formally entered with the Illinois Steel Co.

Pig Iron

Buying of pig iron continues at a moderate rate and prices show little change. Efforts to advance the price of southern pig iron for delivery during the first half, to $10.25 and $10.50, Birmingham, have met with little success. A Cleveland firm has sold 260,000 tons of pig iron since Nov. 1 last, and reports that the demand continues at a fair rate. A Cleveland company which has just blown out its furnace for rebuilding has purchased 10,000 tons of basic for its open-hearth plant.

Crude Steel

Demand for crude steel in the Pittsburgh district has increased rapidly and premiums of from 50 cents to $1 are being paid for prompt delivery of billets and sheet bars. Forging billets have been sold as high as $28, Pittsburgh, an advance of $4 per ton, compared with the market price for the last quarter of 1911. In eastern territory, however, forging billets are selling on a basis of $24, Pittsburgh. Orders for crude steel received by leading interests so far this month greatly exceed those of any corresponding period last year.

Coke

Sales of furnace coke have been made at as high as $2, ovens, in the Pittsburgh district and prices of both foundry and furnace coke are firmer. The advance is due largely to unsatisfactory labor conditions in the Connellsville region. Extremely cold weather, which has interfered with the delivery of coke, has been a factor in advancing the price for prompt delivery.

WORLD'S IRON MARKETS

Pittsburgh

Specifications Are Satisfactory, But New Orders Not Heavy.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Jan. 16.

Mill orders against contracts placed in November and December, while not as heavy as expected in some lines, continue to come in at a very satisfactory rate. Strictly fresh buying is comparatively light with only moderate tonnage involved in new inquiries. Prices on nearly all finished lines are being maintained. Taken as a whole, the market is not as active as during the last six weeks of the old year, but recent developments are not discouraging, as it was generally expected that a let-up in new buying would come about the middle of January.

Demand for billets and sheet bars is extremely heavy, the leading interest and some of the larger independents showing a big gain in mill orders during the first 15 days of this month. The Carnegie Steel Co. is operating its steel works practically full and during the week refused moderately heavy tonnage on account of the filled-up condition of its mills. The business went to smaller mills. Car builders are specifying liberally against contracts for plates, although new business is light. The markets on steel bars and shapes are quiet. Shipments of sheets and tin plate are heavy for this season of the year and mill activities have been extended. An advance of $1 a ton in prices of wire products about Feb. 1, would not be unexpected.

Trading in pig iron has been fair, although all transactions have been handled quietly, the total tonnage aggregating upward of 25,000 tons. Further advances in prices of furnace and foundry coke are noted, and, while the rapid advance in prices is due chiefly to the temporary unsatisfactory labor conditions in the Connellsville region, it is not expected that prices will decline to any great extent over the next few months owing to prospects of a disagreement between operators and miners over the wage scale to become effective April 1. Conditions surrounding the scrap market show little change, the most important development being the inquiry of a local steel company for a round tonnage of selected grades of heavy melting steel. The extremely cold weather has interfered somewhat with the operation of blast furnaces and open-hearth steel furnaces.

Pig Iron.—A moderately heavy tonnage of pig iron has changed hands during the past week, but all trading has been done very quietly. Prices appear to be firm, but heavy buying during the past 60 days has not brought about higher prices on any grade. The extremely cold weather has interfered with blast furnace operations. Several furnaces were idle two or three days during the week owing to the cold weather and one stack has been banked. Clinton furnace, Southside, Pittsburgh, was banked Jan. 13, and one merchant stack in the Youngstown district has been blown out. The Carnegie Steel Co. will blow in additional stacks this week. The Pittsburgh Steel Co., which recently purchased 15,000 tons of basic pig iron for delivery at Monessen, Pa., in January, is reported to have closed for from 12,000 to 15,000 tons for February, the iron to come from an Ohio river valley furnace. The Standard Sanitary Mfg. Co., Pittsburgh, has closed for 2,000 tons of southern iron for its Louisville plant at $10, Birmingham, and between 2,000 and 3,000 tons of northern No. 2 foundry iron for its Northside, Pittsburgh, and New Brighton, Pa., plants for delivery over the first quarter. Sales of Bessemer iron aggregate 3,000 tons, 2,000 tons going to a Monongahela valley interest and 1,000 tons to a local casting interest. All sellers are quoting $14.25, valley, for prompt and first half shipment. We also note scattered sales of No. 2 foundry, aggregating 5,000 tons, at $13 to $13.25, valley, and 1,000 tons of basic at $12.45, valley. About 2,000 tons of malleable have been sold at $13, valley. One large furnace interest is now quoting $13.50, furnace, on No. 2 foundry, but this grade can still be picked up at $13, valley, for immediate shipment. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.40
Basic, Pittsburgh	13.30
No. 2 foundry, Pittsburgh	13.90
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.65

(First Quarter.)

Bessemer, valley	$14.25
Bessemer, Pittsburgh	15.15
Basic, valley	12.40
Basic, Pittsburgh	13.30
No. 2 foundry, Pittsburgh	14.15
Gray forge, Pittsburgh	13.65
Malleable, Pittsburgh	13.65

Ferro-Alloys.—Scattered sales of ferro-manganese for delivery over the next few months are reported at $41, seaboard, but most users previously covered for first half requirements, and the market as a whole is quiet. There has been sufficient trading in 50 per cent ferro-silicon to show that the market is firm at $70, Pittsburgh.

We quote ferro-manganese at $41, Baltimore, for prompt and forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $70, Pittsburgh, for prompt and forward delivery; 12 per cent, $22.50 to $23; 11 per cent, $21.50 to $22; 10 per cent, $20.50 to $21, f. o. b. Globe, Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Car builders are specifying very liberally against contracts for plates, but no new business of importance has developed in this market during the week. Car plants are operating at about 75 per cent of capacity, and are assured steady operation at this rate for three or four months at least. The Northern Pacific railroad has placed an order with the Standard Steel Car Co. for 500 all-steel gondolas. The Grand Trunk is taking bids on 1,000 automobile and refrigerator cars. The Elgin, Joliet & Eastern has given the Standard Steel Car Co. an order for 250 hopper cars. The report that the Pennsylvania lines west have placed orders for an additional 3,000 cars has not been confirmed. Officials of the Pennsylvania system state that the 7,000 cars ordered recently are for re-

placement only. Practically all mills are quoting 1.15c, Pittsburgh, although a few are giving away part of their freight advantage. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.15c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ¼ inch to and including $\frac{3}{16}$-inch plate on thin edge, 0.10c; under $\frac{3}{16}$ and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—A further extension of mill operations by both leading interest and independents is noted, and upward of 80 per cent of the serviceable sheet mills of the country are now in operation. Specifications continue to come in at a very satisfactory rate, and production this month will be heavy. There is not a great deal of fresh buying, as most large users are now under contract for their requirements over the next 60 days. There has been no material change in the price situation. We quote the market as follows, with $1 a ton added as the delivered price in the Pittsburgh district:

Blue annealed sheets No. 10 gage, 1.40c; black annealed sheets No. 28 gage, 1.90c; galvanized sheets, No. 28 gage, 2.90c; painted roofing sheets, $1.35 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.45 per square for No. 28 gage, 2½-inch corrugation, f. o. b. Pittsburgh.

Tin Plate.—Users continue to specify very liberally. Several of the larger independents are operating at 100 per cent of capacity, and more than 80 per cent of the total tin plate mills are now active. As is usually the case at this season of the year, there is little new business being placed. Prices are firm. We quote the market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.40 f. o. b. mill, Pittsburgh district.

Rails and Track Material.—Local rail mills have not been officially advised of the 1912 steel rail tonnage they will receive from the larger trunk lines, but late developments indicate that the initial purchases of some of the roads, at least, will not cover their full requirements. Rail mills are operating at slightly increased capacity, and operations will be further extended next month, as it is understood that a large portion of the pending tonnage will be for spring delivery. There is an active demand for light rails, some fairly large orders having been placed so far this month, and prices are slightly firmer. A moderate tonnage of railroad spikes and track supplies is being figured upon, but orders so far have not been very heavy. The market is quoted as follows, the base price on open-hearth steel rails being 1.34c per pound, at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.20c to 2.25c, Pittsburgh.

Railroad Spikes.

4½, 5 and 5½ and 9/16	$1.40
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x $\frac{7}{16}$	.20
3, 3½, 4 and 4½ x $\frac{3}{8}$	.30
2½ x $\frac{3}{8}$	.40
2½, 3 and 3½ x $\frac{7}{16}$	.60
2 x $\frac{7}{16}$	.80

Steel.—Owing to the filled-up condition of some of the larger mills, and the fact that some of the smaller steel companies, on account of increased activities in finished lines, at present are not regular sellers of billets and sheet bars, this market continues very firm. Mill orders of the leading interest so far this month exceed those of any corresponding period in 1911 by a wide margin. This company has also rejected considerable tonnage offered at current prices for immediate shipment, as its steel mills are running practically full. Orders have been issued to start the Columbus, O., plant which has been idle for many months. One company reports scattered sales of forging billets at $28, Pittsburgh, which represents an advance of $4 a ton as compared with the market established during the last quarter of 1911. This figure probably could be shaded, the market being quotable at $27 to $28, Pittsburgh. Billets and sheet bars are quoted as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $20, with the usual extras for size and analysis, and open-hearth rolling billets, $20, Bessemer sheet and tin bars are quoted at $21, and open-hearth sheet bars are quoted at $21 f. o. b. Pittsburgh or Youngstown, with full freight to destination added. Forging billets are quoted at $27 to $28, Pittsburgh.

Hoops and Bands.—New business is only moderately heavy, although users continue to take heavy shipments against contracts previously made. We quote the market as follows:

Hoops in carload lots, 1.30c, Pittsburgh; in less than carload lots, 1.40c; bands, 1.15c to 1.20c, base, with net extras, as per standard steel.

Merchant Bars. — Specifications against contracts for steel bars so far this month have been very liberal, and the market appears to be firmer than at any time since prices were advanced in December. On the general run of business, 1.15c, Pittsburgh, can be done for first quarter shipment, while some mills which are booked heavily are not quoting below 1.20c, Pittsburgh, particularly for second quarter shipment. New business is not as heavy as ten days ago. The regular bi-monthly bar iron card settlement between the Amalgamated Association of Iron, Steel and Tin Workers and representative makers, based on sales made in November and December, showed a 1.20c card, which means that the puddlers' wage scale for January and February will be unchanged at $5.50 a ton. The fact that western mills now figure in the bi-monthly settlement, is partly responsible for the low card, as mills in the immediate Pittsburgh district continue to quote 1.35c on bar iron and some sales are reported at this figure. The market on shafting shows some improvement, and prices are slightly firmer. We quote the market as follows:

Common iron bars, 1.35c, Pittsburgh; Bessemer and open-hearth steel bars, 1.15c to 1.20c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3 inch, 1.25c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds of a size, 0.35 advance. Cold rolled and ground shafting, 65 per cent off in carloads and 60 and 10 per cent in less than carloads, delivered in base territory.

Muck Bar.—This market is quiet with little inquiry, and no trading of importance. We continue to quote muck bar at $28 to $29, Pittsburgh.

Structural.—The Fort Pitt Bridge Co., Pittsburgh, has received the contract for the Carnegie Technical Schools addition, Pittsburgh, involving 700 tons of steel, and the McClintic-Marshall Construction Co. has been awarded the contract for the Union National Bank building, Clarksburg, W. Va., involving 400 tons. The contract for the Marine National Bank building, Buffalo, involving 4,000 tons, has gone to the Lackawanna Steel Co. Bids will be invited shortly for the East End Savings & Trust Co. building, Pittsburgh, which will require 1,000 tons. Plans are being prepared for several other proposed new buildings in the Pittsburgh district, but it is not likely that bids will be invited for several weeks. Low fabricating prices are still being quoted. We quote the market as follows:

Beams and channels, 15 inches and under, zees, 1.15c to 1.20c; tees, 1.15c to 1.20c; angles, from 3 to 6 inches, 1.15c to 1.20c; over 6 inches, 1.25c; universal and sheared

1.15c to 1.20c; over 15 inches, 1.25c to 1.30c, plates, 6¼ inches wide and wider, 1.25c.

Merchant Pipe.—The Philadelphia Co., Pittsburgh, has placed an order with an independent mill for eight miles of 12-inch steel line pipe. The same company awarded contracts to another independent mill for 10 miles of 3-inch iron tubing; two and a half miles of 8¼-inch iron casing, and three miles of 6-inch iron line pipe, while another mill received about one mile of 6⅝-inch iron casing. Bids have gone in on about 19 miles of 18-inch steel line pipe for water pipe line construction in Canada, and the order likely will be placed with a domestic maker. Reports from all sections of the country indicate that 1912 will be an exceptionally good year for oil and gas line pipe construction, owing to the projected lines which were held over the past two years, and present low prices on pipe. The proposed advance in the price of merchant pipe has not materialized, and there is no indication at present that prices will be advanced in the very near future, although the market appears to be firm. We quote the following official discounts in carload lots, subject to the usual preferential discounts to the larger buyers.

Iron and Steel Pipe Basing Prices

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼ inch	74	54	68	48
⅜ inch	75	65	69	59
½ inch	78	68	72	62
¾ to 1¼ inch	81	73	75	67
2 to 3 inches	82	75	76	69
	Lap weld.			
2 inches	79	72	72	65
2½ to 4 inches	81	72	74	67
4½ to 6 inches	80	72	73	65
7 to 12 inches	77	68	71	61
13 to 15 inches	55	..	47	..
Extra Strong, Plain Ends.				
	Butt weld.			
¾, ¼, ⅜ inch	70	60	65	55
½ inch	75	69	70	64
¾ to 1¼ inch	79	73	74	68
2 to 3 inches	80	74	75	69
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	76	70	71	65
2½ to 4 inches	81	74	74	67
4½ to 6 inches	77	71	72	66
7 to 8 inches	70	60	65	55
9 to 12 inches	65	55	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	65	59	60	54
¾ to 1¼ inch	68	62	63	57
2 to 3 inches	70	64	65	59
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	66	60	61	55
2½ to 4 inches	68	62	63	57
4½ to 6 inches	67	61	62	56
7 to 8 inches	60	50	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

The above discounts are for full weight pipe, subject to a variation of 5 per cent, merchant pipe, when specified, being furnished up to 6 inches at one point higher discount (lower price.)

Boiler Tubes. — Price concessions are still being made on both merchant and locomotive boiler tubes, and general market conditions are unsatisfactory. New business is not very heavy, and specifications are moderately light. We quote official discounts on steel and charcoal iron boiler tubes as follows, from which concessions of $5.00 per ton are being made regularly by most mills.

Steel:

1¼ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch	72
3½ to 4½ inch	75
5 and 6 inch	67½
7 to 13 inch	65

Charcoal Iron:

1½ inch	48
1¾ to 2¼ inch	50
2½ inch	55
2¾ to 5 inch	60

To destination east of Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—A decidedly firmer tone is noted in the market on wire products, and an advance of $1 a ton in the very near future would not be unexpected, as there is a disposition on the part of some mills to withdraw present quotations of $1.55, Pittsburgh, on wire nails, and $1.35, Pittsburgh, on plain wire, for carload lots to jobbers. A number of contracts made a few months ago at $1.50 for nails, and $1.30 for plain wire, which were made prior to the advance to the present level have expired, and in such cases contracts have been made at current prices. Specifications are coming in more freely. Cut nails are somewhat firmer, and $1.55, Pittsburgh, is now the usual asking price. We quote the market as follows:

Wire nails, jobbers, carload lots, $1.55; retailers' carload lots, $1.60; cut nails (western makers) jobbers' carload lots, $1.55; painted barb wire, jobbers' carload lots, $1.55; retailers' carload lots, $1.60 with 30c for galvanizing; plain wire to jobbers in carloads, $1.35; and to dealers, in carloads, $1.40; polished staples, $1.55; galvanized staples, $1.85.

Wire Rods.—Large users of wire rods who previously covered for first quarter requirements are specifying in a liberal manner, and the market is fairly firm. We quote $24.50 to $25.00, Pittsburgh, for Bessemer and open-hearth wire rods.

Coke.—There has been a further advance in the price of spot furnace coke, and sales have been made at $2, ovens. This is the highest price paid for furnace coke for prompt shipment in more than a year, and compares with $1.40 to $1.60, ovens, during the last half of 1911. We note sales of 3,000 tons of furnace coke at $2, ovens, and 2,000 tons at $1.90, ovens, for immediate shipment. Prices on foundry coke are firmer, and $2.10, ovens, now represents the bottom of the market, as compared with $1.85 to $1.90, ovens, last month. The Westinghouse Electric & Mfg. Co. has finally closed on its inquiry for foundry coke, aggregating 3,600 tons for delivery over 1912. The rapid advance in the price of both furnace and foundry coke, is due chiefly, to the unsatisfactory labor conditions in the Connellsville region. The H. C. Frick Coke Co. started 1,500 additional ovens during the week. We quote standard Connellsville furnace coke for prompt shipment at $1.90 to $2, ovens, and on contract, $1.85 to $2, ovens. On high grade Connellsville foundry coke, we quote $2.10 to $2.25, ovens, for prompt shipment, and from $2.10 to $2.40, ovens, for forward delivery. The Connellsville *Courier's* figures for the week ending Jan. 6, show 28,093 active ovens with an output of 322,096 tons as compared with 26,403 active ovens, and a production of 294,189 tons the previous week.

Old Material.—The local scrap market shows little change from last week. There is a fair demand for some grades, and a few companies have lifted the embargo against shipments of heavy melting steel. A local steel company which recently purchased heavy tonnage of selected grades of heavy melting steel is understood to be in the market for from 6,000 to 10,000 tons. Heavy melting steel has been sold at $12.75, delivered, although some sellers are asking higher prices. Additional contracts have been made with sheet and tin mills for their output, and bundled sheet scrap is firm at $11 to $11.50, delivered. Machine shop turnings are not as firm as last week, and the market is quotable at $9.75 to $10.25, a reduction of 25 cents a ton. We quote, gross tons, delivered in the Pittsburgh district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee as follows:

Heavy melting scrap	$12.50 to 12.75
Rerolling rails	12.75 to 13.00
Malleable	12.00 to 12.50
Bundled, sheet scrap	11.00 to 11.50
Iron axles	21.50 to 22.00
Old iron rails	15.00 to 15.50
Stove plate	9.00 to 9.50
No. 1 wrought scrap	13.00 to 13.50
Old car wheels	13.00 to 13.50
Low phosphorus	15.00 to 15.50
Machine shop turnings	9.75 to 10.25
Cast borings	9.50 to 9.75
No. 1 cast scrap	13.00 to 13.50

The Fulton Iron Works, St. Louis, expects to have its new plant for the manufacture of heavy steam engines and sugar mill machinery completed about Jan. 31. The plant includes a foundry and machine shop and will cost about $300,000. It will employ about 600 men. The Fulton Iron Works is owned bp J. F. O'Neil, L. E. Lortz and Roland L. Switzer.

Chicago

Heavy Specifying Against Contracts —Little Pig Iron Business.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Blk., Jan. 16.

There is a large amount of specifying against existing contracts and this forms the most satisfactory feature of the situation. Current orders, however, show some decrease, compared with the rate maintained during the first week in the year. New business is especially light in structural lines and fabricating contracts are small, the total involved in those placed in the west last week amounting to only 950 tons. Specifications for track bolts and spikes continue good and orders for rail joints, tie plates, etc., are also satisfactory, but orders for standard rails continue to run very light. The wire market is somewhat quieter, although the makers are considering another advance in prices. Sheet makers are experiencing but little difficulty in obtaining a large volume of business.

Pig Iron.—The buying movement which characterized the opening of the year has largely spent itself and for the time being the pig iron market in the west is quiet. A number of southern furnaces are now quoting $14.35, Chicago, for No. 2 foundry on contracts, including shipment over the entire first half and the efforts which have been made to bring the general level of the market up to $14.60, Chicago, seem to have been allowed to lapse. The foundries in this territory are now quite well covered for their first quarter requirements and the leading consumers are buying sparingly.

There are a few small inquiries in the market for high silicon iron, including one for 200 tons of 8 per cent grade from a Racine manufacturer of agricultural implements and another for 200 tons of 3 per cent iron from a Chicago concern. The prices quoted on these inquiries indicate that high silicon iron is still available at extremely low quotations, $17.40, Chicago, for 8 per cent iron having been shaded slightly. A Milwaukee manufacturer of heavy machinery is inquiring for 1,000 tons of Southern No. 2. A local foundry is in the market for from 300 to 500 tons of No. 1 Southern iron and offers on a basis of $10.75, Birmingham, for second quarter delivery have been received on this business. We note a sale of 1,000 tons of special analysis iron in this district.

The following prices represent the market for Chicago delivery, except Northern foundry and malleable Bessemer, made in local furnaces, which are quoted f. o. b. furnace:

(First Half Shipment.)

Lake Superior charcoal	$16.50
Northern foundry No. 2	14.00
Southern foundry No. 2	14.35
Southern silveries, 5 per cent silicon	15.60
Jackson Co. silveries, 8 per cent	17.40
Malleable Bessemer	14.00
Alabama basic	14.35

Billets.—The demand for billets is a little slower and the market shows no special features. Higher quotations in the east have not influenced prices in this district appreciably. We continue to quote open-hearth forging billets, $26, Chicago, re-rolling billets, $22.60.

Merchant Bars.—New orders are a little lighter, but specifications for steel bars are holding up very well. Iron mills are operating at about 65 per cent of capacity, but prices lower than 1.15c, Chicago, seem to have disappeared. The demand for shafting is fair. Orders for iron and steel out of stock are moderately good. The price situation in general shows no change and the local market for steel bars has not followed the advance which has been achieved in the Pittsburgh district. The demand for steel for reinforcing concrete is light.

We quote, for Chicago delivery, as follows:

Bar iron, 1.15c to 1.20c; hard steel bars, rerolled, 1.15c to 1.22c; soft steel bars, bands and small shapes, 1.25c to 1.33c, base; hoops, 1.48c; smooth finished machinery steel, 1 inch and larger, 1.78c; shafting 60 per cent off list for carload lots, 55 per cent off for less than carloads.

On iron and steel from local stock, we quote, as follows:

Bar iron, 1.50c to 1.60c per pound base; soft steel bars, 1.50c to 1.60c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—While fabricating contracts are fairly good throughout the western territory as a whole, in the immediate Chicago district there is very little business to be had at the present time. The general contract for the Dime Savings Bank building, Detroit, which will require about 5,500 tons of steel, has been let to Lanquist & Illsley, of Chicago. The steel contract has not yet been placed. The American Bridge Co. has taken 396 tons for two highway bridges over the Brazos river in Texas and the Portland Bridge & Iron Co. has taken 179 tons for one 200-foot and one 148-foot highway span to be erected in Douglas county, Ore. The Corn Products Refining Co. has let a contract for six storage tanks, 128 tons, which will be built at the Argo plant by Heggie Bros., Joliet. The Corn Products Refining Co. has also let a contract for six storage tanks to be erected at the Granite City, Ill., plant. The Phoenix Iron Works has taken 112 tons for the post office at Florence, Ala.

We quote, structural material, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.30c to 1.38c. For extras, see Pittsburgh report.

Plain material, out of store, is as follows:

All angles, 3 inches and larger, including 6 inches, $1.60 to $1.65 per 100 pounds; angles over 6 inches, $1.70 to $1.75 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.60 per 100 pounds, base; channels, 3 inches and larger, $1.60 per 100 pounds, base.

Rails and Track Fastenings.—Specifications for bolts and spikes continue good and orders for rail joints, tie plates, etc., are also satisfactory. Rail orders continue to run very light. The Northern Pacific is understood to have ordered 36,000 tons of standard rails, divided among the Illinois Steel Co., the Lackawanna and the Colorado Fuel & Iron Co. The latter concern is credited with 10,000 tons. The rail mills at Gary and South Chicago are still down and it is not yet known when operations will be resumed. The repairs and improvements in contemplation, if carried out fully, would cause the mills to remain idle until the beginning of February, but should urgent orders develop, it would be possible to start up much sooner.

We quote, light rails, f. o. b. Chicago and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c; railroad spikes, 1.50c to 1.55c, smaller size spikes, 1.65c, base; track bolts with square nuts, 1.90c base.

Plates.—Although local makers have all the business they can conveniently take care of, the market is disturbed by competition from some eastern mills which are not running full, and considerable tonnages have recently been taken in the west by representatives of eastern makers. Although local mills are holding firmly at the minimum of 1.30c, Chicago, some business, due to this competition, is being placed at 1.28c. The Chicago & Northwestern has ordered 550 30-ton, 40-foot refrigerator cars from the Haskell & Barker Car Co., which concern will also build 1,500 refrigera-

tor cars for the Great Northern. The Western Live Stock Express, Chicago, has ordered 100 double-deck stock cars, the bodies to be built by the Whipple Car Co. and the steel underframes and trucks by the Bettendorf Axle Co. An option has been taken on an additional 100 double-deck stock cars. The Grand Trunk is making inquiries for 500 automobile cars and 500 refrigerator cars.

We quote, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.30c to 1.38c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.60c.

Sheets.—The sheet tonnage remains heavy, but prices show some tendency to react. Mill quotations on No. 28 black sheets are now 2.03c, f. o. b. Chicago; No. 28 galvanized being held at 3.03c, and No. 10 blue annealed at 1.53c.

We quote, store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 1.90c; No. 12, 1.95c. Box annealed, No. 28, 2.30c. Galvanized, No. 28, 3.35c.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

Wire Products.—The wire market is somewhat quieter, although makers are considering another advance in prices. The cold weather has cut down the demand from agricultural regions. There is only a fair amount of buying by jobbers.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.73; retailers' carload lots, $1.83; retailers' less than carload lots, $1.93; painted barb wire, jobbers' carload lots, $1.73; retailers' carload lots, $1.83; retailers' less than carload lots, $1.93, with 30c for galvanizing; plain wire, jobbers' carload lots, $1.53; retailers' carload lots, $1.58.

Merchant Pipe and Tubes. — The market for merchant pipe remains quiet and is not expected to improve until the cold weather breaks up. There is no indication at this time that warehouse prices will be changed in the near future. Local mills are operating on slightly better schedules than they were a year ago. The demand for boiler tubes is moderately good and prices out of stock are unchanged.

We quote, merchant pipe and tubes, out of stock, f. o. b. Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Ga'v.
Butt.				
⅛ inch and ¼ inch.	71.2	50.2	63.2	42.2
⅜ inch	75.2	64.2	66.2	55.2
½ inch to 1½ inch.	78.2	69.2	71.2	62.2
Lap.				
2 inch	76.2	68.2	68.2	60.2
4½ inch to 6 inch..	77.2	68.2	69.2	60.2
Card Weight.				
7 inch to 12 inch...	74.2	63.2	67.2	56.2
Extra Strong Plain Ends.				
Butt.				
⅛, ¼, ⅜ inch	66.2	54.2	60.2	48.2
½ inch	71.2	59.2	65.2	53.2
2 inch to 3 inch...	76.2	64.2	....	....
Lap.				
2 inch	72.2	60.2	66.2	54.2
7 inch to 8 inch....	66.2	54.2	60.2	48.2
Double Extra Strong.				
Butt.				
½ inch	59.2	47.2	....	....
¾ inch to 1½ inch.	62.2	50.2	....	....
Lap.				
2 inch	60.2	48.2	....	....
4½ inch to 6 inch..	61.2	49.2	....	....
7 inch to 8 inch....	54.2	42.2	....	....

TUBES.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent.
1 inch	39	..	57½
1¾ to 2¼ inch.....	55	40	35
2¾ to 3¼ inch.....	65	50	46
3½ to 4½ inch.....	67½	50	46
5 to 6 inch.....	55	..	..

Cast Iron Pipe.—Inquiry is active, although few large contracts have been placed recently. The city of Minneapolis has awarded 3,750 tons to the American Cast Iron Pipe Co., Birmingham, Ala. Prices on cast iron pipe are firm and some advances are under consideration.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $26.50; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material. — The scrap market has relapsed into reaction. Makers of iron bars claim that current quotations are too high to justify any buying except to cover urgent current needs and steel makers are now fairly well supplied with old material. Price changes have been irregular. Heavy melting steel is slightly weaker. The Chicago, Milwaukee & St. Paul has sold 1,500 tons and the Michigan Central 3,000 tons of various grades of old material.

We quote, for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.	
Old car wheels	$13.00 to 13.50
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.75 to 13.25
Old steel rails (3 ft. and under)	11.75 to 12.25
Frogs, switches and guards	10.75 to 11.25
Heavy melting steel	10.75 to 11.25
Shoveling steel	10.00 to 10.50
NET TONS.	
No. 1 R. R. wrought	$11.00 to 11.50
No. 2 R. R. wrought	10.00 to 10.50
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	10.00 to 10.50
Shafting	13.50 to 14.00
Iron car axles	18.00 to 18.50
Steel car axles	15.50 to 16.00
Locomotive tires	14.00 to 15.00
Dealers' forge	8.75 to 9.25
Pipe and flues	8.00 to 8.50
No. 1 cast	11.00 to 11.50
No. 1 busheling	8.50 to 9.00
No. 2 busheling	6.25 to 6.75
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	12.50 to 13.00
Cast and mixed borings	6.00 to 6.50
Machine shop turnings	6.50 to 7.00
Railroad malleable	10.50 to 11.00
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.50 to 13.00
Angle bars, steel	10.00 to 10.50
Stove plate and light cast scrap	9.25 to 9.75

Cleveland

Cleveland Company Buys Basic—Contract for Power House.

Office of THE IRON TRADE REVIEW, Penton Bldg., Jan. 16.

Iron Ore.—The very limited interest manifested a week ago by some furnace operators in the iron ore market is not now noticeable and the situation is entirely devoid of developments. Lake Superior interests are hoping that on account of recent developments in the east, whereby a considerable tonnage of Newfoundland ore has been contracted for for shipment to Europe, there may be more demand in the east for Lake Superior ores than has been true for several years.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—The Upson Nut Co., having blown out its furnace to make extensive changes in its construction, has purchased 10,000 tons of basic for second quarter delivery. One Cleveland agency has sold 260,000 tons of various grades of pig iron since Jan. 1, 1912, and reports a continuation of very fair demand. While there is a slight tendency toward hardening of prices, quotations are not really higher. For delivery in Cleveland, throughout the first half, we quote as follows:

No. 1 foundry	$13.75
No. 2 foundry	13.25
No. 2 southern	14.35
Gray forge	12.50
Bessemer	15.15
Lake Superior charcoal	16.50
Jackson Co. 8 per cent silvery	17.05

Coke.—The extremely cold weather has caused great inconvenience and delay in delivery of coke in the Cleveland district. Prices for both furnace and foundry coke for prompt delivery are higher. We quote:

Connellsville furnace coke, $1.90 to $2.00 for prompt delivery, and $1.85 to $2.00 on contract; Connellsville foundry coke, $2.10 to $2.25 for prompt, and $2.10 to $2.40 on contract.

Finished Material.—Mills are doing

a very fair business, specifications being satisfactory and new orders numerous, although not calling for large tonnages. An independent jobbing concern reports a large increase in business compared with the first two weeks of the year. A. Bentley & Sons, Toledo, have been awarded the general contract for the power house for the Northern Ohio Traction Co., to be built at Cuyahoga Falls, O. About 700 to 800 tons of steel will be required, for which the contract has not been awarded. An inquiry is pending for 750 tons of forging billets for a manufacturer of automobile parts. Prices on structural material and bars are being well maintained, but there is some shading on plates.

Old Material.—Dealers are finding increasing difficulty in getting cars loaded because of the extremely cold weather and shipments consequently are slow. Local consumers of heavy steel are not buying in quantity, but are taking shipments on contract steadily. Quite a demand for cast scrap has sprung up from local foundries as well as from outside the immediate Cleveland market. We quote, gross tons, f. o. b. Cleveland, as follows:

Old steel rails (under 6 ft.)	$12.00 to 12.25
Old steel rails (over 6 ft.)	12.25 to 12.75
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	11.50 to 12.00
Steel axles	18.00 to 18.50
Axle turnings	8.50 to 9.50
Malleable iron (agricultural)	10.75 to 11.25
Heavy steel	11.00 to 11.50
Country mixed steel	9.50 to 10.00
Bundled sheet scrap	8.50 to 9.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.50
No. 1 busheling	9.50 to 10.00
No. 1 machine cast	11.00 to 11.50
No. 1 dealers' wrought	10.00 to 10.50
Machine shop turnings	7.00 to 7.25
Pipes and flues	9.00 to 9.50
Wrought drillings	7.00 to 7.25
Stove plate	9.00 to 9.50
Cast borings	6.50 to 7.00
Wrought iron piling plate	15.50 to 16.00
Wrought iron arch bars	15.50 to 16.00

Cincinnati

Moderate Volume of Business in Pig Iron.—Ten Dollar Price Holds.

Office of THE IRON TRADE REVIEW,
808 Provident Bank Bldg., Jan. 16.

Pig Iron.—While there is a fair run of small sales, there is nothing to indicate a buying movement to any size in this particular territory. The western section and some portions of the east report a larger volume of business transacted than the local field. There has been some demand for high silicon, southern, Lake Superior charcoal and ferro-silicon irons. Large sales of ferro-phosphorus are reported in various sections. Local foundries are said to be operating in a more or less unsatisfactory manner and considerably below normal. The situation so far as southern furnaces is concerned is practically unchanged. They seem to be somewhat indifferent in taking on new business, apparently having order books for nearby delivery in good shape. The established price is $10, Birmingham, for any delivery up to and including July 1, with a number of standard brands quoted at $10.50. It is probable, however, that the low figure could be secured by customers on desirable tonnage for practically any make of southern iron. Northern prices continue to hold strongly, at $13 Ironton, which figure appears to be practically the minimum at which it can be profitably produced. It is understood that the car interests in the west, have recently purchased a round lot of iron for delivery covering the first half, but particulars as to exact tonnage and brands are lacking. The inquiry from a southern Ohio melter that was last week pending has been taken care of, and the iron secured. One of the large sanitary interests bought 2,500 tons Saturday for southern territory. An eastern consumer is in the market for 1,000 tons foundry grades for February and March delivery. Freight rates from Birmingham $3.25 and from Ironton $1.20. We quote as follows:

Southern foundry No. 2	$13.25 to 13.75
Southern foundry No. 3	13.00 to 13.50
Southern foundry No. 4	12.75 to 13.00
Southern gray forge	12.50 to 12.75
Mottled	12.50 to 12.75
Southern No. 1 soft	13.75 to 14.25
Southern No. 2 soft	13.25 to 13.75
Standard southern car wheel	25.25 to 25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson co. 8 per cent silicon	16.45 to 16.95

Coke.—The market is firm, and a fair volume of business has been booked during the week. Weather conditions have had some influence on trade, and there is some unwillingness on the part of ovens to enter new contracts at this time. Shipments are being delayed on account of railroads being somewhat congested at points, but general conditions are fairly satisfactory. Prices are strong and holding well. We quote from the leading coke producing districts as follows:

Connellsville	Prompt district. shipment.	Contract second half.
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.70 to 1.75	1.75 to 1.90
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.10	2.00 to 2.10
Furnace coke	1.65 to 1.75	1.70 to 1.90
New river:		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Local structural demand is rather quiet, and little is pending of interest. Selling agencies report considerable new business in other sections, and reports are encouraging, as a rule. Steel bars are active and prices are firm and strong at 1.15c, Pittsburgh.

Old Material.—A fair tonnage has been sold during the week, and some offerings of moderate tonnages have found their way to dealers' yards. Business, however, as a rule, is far from normal, and more or less unsatisfactory. Prices are said to be somewhat firmer, but occasionally show some fluctuation. We quote as follows:

GROSS TONS.

Old iron rails	$12.00 to 13.00
Old steel rerolling	11.00 to 11.50
Old iron axles	18.00 to 18.50
Steel melting scrap	9.50 to 10.50
Car wheels	10.50 to 11.00

NET TONS.

Old No. 1 R. R. wrought	$10.50 to 11.50
No. 1 machinery	10.00 to 10.50
No. 1 busheling	8.00 to 9.00
Stove plate	6.50 to 7.00
Machine shop turnings	5.50 to 6.00
Cast borings	4.50 to 5.00
Grate bars	6.00 to 7.00
Sheet iron bundled	6.50 to 7.50
No. 1 cast scrap	10.00 to 10.50
Heavy turnings	6.00 to 7.00

Philadelphia

Eastern Mills Show Little More Activity—Buying of Virginia Iron.

Jan. 15.

There is a little more evidence in the eastern market that the sectional mills are beginning to realize some of the recent heavier buying movement in finished lines through the better-filled condition of Pittsburgh plants. The process is still very slow, however, and is not evenly distributing itself. It would appear that the competition of Pittsburgh district mills in the east is not as active as it has been. Pig iron is not brisk, but there continue a few currents of fair demand. Old material remains quiet.

Pig Iron.—The tonnage of new business is not large and there is a lack

of briskness to demand. The exceptions to the rule of small lot sales and inquiries are not numerous. That there is still more or less uncovered first quarter requirement in some sections is indicated by a comparatively active buying movement in Virginia iron at natural markets, geographically, for such metal. These sales have aggregated 5,000 tons or more and have been especially to consumers located in the Cumberland valley, including one lot of about 2,000 tons divided among several makers. The prices have ranged from $14.40 to $15.15, delivered, based generally upon $12.25, furnace, for No. 2X, though in a few cases $12.50 was paid. A Virginia pipe maker recently bought about 1,000 tons. In Philadelphia and nearby districts, sales of foundry are usually for 500 tons and less at prices ranging all the way from $14.75 to $15.25, delivered, for No. 2X. Some very low prices, shading $14.75, delivered, are sometimes heard, and these are applied to certain brands that are generally low sellers. A Schuylkill valley rolling mill has closed for about 2,000 tons of standard forge for a nearby maker at about $14, delivered. This grade is now quoted at $14 to $14.25, delivered. Basic is still practically lifeless. One eastern Pennsylvania steelmaker which was sounding the market for several thousand tons for second quarter, has temporarily abandoned its efforts. It sought to buy the metal at from $14 to $14.15, delivered, but the furnaces would not accept such levels. A Philadelphia steel company which recently closed for a block of Bessemer and 3,000 tons of low phosphorus, the latter largely for first quarter, has put out an inquiry for 3,000 to 5,000 tons of low phosphorus for last half. It will not buy any basic at present. Conflicting reports are current as to the price paid for this Bessemer, which went to a Lehigh valley maker, but it was probably taken at less than $16, delivered. Other round sales of low phosphorus iron have been made in the east. The New York maker of standard iron of this grade has sold liberally against its capacity and is more independent in competing for new business.

We quote for prompt and first quarter shipment in Philadelphia and vicinity, with shipping charge included, for Virginia and southern iron from docks:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	14.75 to 15.25
No. 2 plain	14.50 to 14.75
Standard gray forge	14.00 to 14.25
Basic	14.25 to 14.50
No. 2X Virginia	15.50 to 15.75
No. 2 southern	14.50 to 15.00
Standard low phosphorus	19.25 to 19.50

Coke.—Several eastern furnace consumers are active in the spot market. One Schuylkill valley buyer took about 4,000 tons, and a steelmaker is in the market for about 2,000 tons. Prices paid for spot Connellsville coke are usually about $1.80 to $1.85, ovens, but some makers are asking as high as $2, ovens.

Finished Materials.—There are some indications that the effect of better conditions in the Pittsburgh district is making itself felt by eastern mills, but this change as yet has been only slight and it has not proceeded long enough to arouse any convictions that it is permanent. Such plants as those of the Pennsylvania Steel Co., the Alan Wood Iron & Steel Co. and the Eastern Steel Co. present a record of a little more active operations. The situation with eastern plate mills, however, is practically unchanged and other plants are slow to respond.

The moderately-enlarged tonnage coming to the east at present appears due in considerable part to the more independent position of Pittsburgh mills in quoting for new business at former prices. This condition is giving the east a wider opportunity for bookings. Plates and shapes are being quoted by eastern mills at 1.30c to 1.35c, Philadelphia, or 1.15c to 1.20c, Pittsburgh, and in some recent cases this level on shapes has been shaded. Contracts are usually being taken cautiously, but in some cases 1.35c has been secured on plates for first quarter. Steel bars are firm, and bar iron is inclined toward betterment. There is some expectation of a price advance in nails and wire around Feb. 1. Quite liberal specifications are now coming in against the contracts taken at present prices of 1.55c on nails and 1.35c on wire. Some large specifications for tin plate have been entered.

Structural awards are light. The Pennsylvania Coal Co. has placed 600 tons for a coal breaker at Underwood, Pa., with an independent shop. Barber & Ross have 300 tons for the Woodward & Lathrop building, Washington, reported as having been taken by Deitrich Bros. The J. G. Brill Car Co. has recently taken 500 street railway cars for the Philadelphia Rapid Transit Co. and 300 for Buffalo lines, which will require about 3,000 tons of steel. The McClintic-Marshall Construction Co. is understood to have placed 20,000 tons of plates and 21,000 tons of shapes for the Hell Gate bridge with a Pittsburgh mill and most of the work will be done in that territory. The deliveries will run about two years. A sale of 1,000 tons of plates for export has been made in this market. Bids went in this week on about 1,000 tons, including 500 tons of Bethlehem shapes specified by the Holiston National Bank building, Knoxville, Tenn., and 1,500 tons for the Bellevue-Stratford hotel addition, this city. The government will take bids, Jan. 23, on about 400 tons of twisted bars for Panama.

Competition is very keen in rivets, but leading manufacturers in this line are booking important contracts at 1.50c, Pittsburgh, for structural, and 1.60c, Pittsburgh, for boiler rivets. The market appears stronger in the east and south than in some other sections.

We quote, delivered at Philadelphia and vicinity, as follows:

Structural shapes, 1.30c to 1.35c; steel plates, 1.30c to 1.35c; steel bars, 1.25c to 1.30c; common bar iron, 1.25c to 1.30c; cut nails, 1.65c to 1.70c; blue annealed sheets, No. 10 gage, 1.65c to 1.70c; 4 x 4-inch open-hearth rolling billets, $21.90 to $22.40; forging billets, $26.40 to $27.40. Extras shown under Pittsburgh report.

Semi--Finished Steel.—Despite reports of advances by Pittsburgh mills, forging billets are still being offered by eastern makers at $26.40, Philadelphia, or $24, Pittsburgh. Rolling billets are held at $20, Pittsburgh, or $22.40, Philadelphia, but on attractive lots this price could probably be shaded 50 cents for open-hearth steel. An eastern maker has closed a contract for 2,500 tons of forging billets for first half. A lot of 10,000 tons of rolling billets recently closed by an eastern consumer, it now develops, went to an eastern Pennsylvania instead of central Pennsylvania maker. Sales generally are small.

Old Material.—As far as the active patronage of principal eastern consumers goes, the market is still in a waiting attitude. There is only a limited volume of trading with the dealers on firm offers, but the railroad lists continue to show goood prices. Some of the Reading railroad's heavy steel is reported to have brought $12.75, or higher, delivered, while the open offers of eastern Pennsylvania mills are still around $12.25, delivered. Other grades are also in only moderate demand. Pittsburgh consumers continue to draw some tonnage of borings from favored points of the east at about $10, delivered, which represents a higher sales figure than $8.50, delivered Lebanon.

We quote gross tons, delivered in

eastern Pennsylvania and New Jersey consuming territory, as follows:

Old iron rails	$16.00 to 17.00
Old steel rails (rerolling)	14.25 to 14.75
No. 1 heavy melting steel	12.25 to 12.75
Old car wheels	12.25 to 12.75
Old iron axles	23.00 to 24.00
Old steel axles	17.50 to 18.50
No. 1 railroad wrought	15.50 to 16.00
Wrought pipe	11.75 to 12.25
Cast borings	8.25 to 8.75
Machine shop turnings	9.50 to 10.00
Heavy cast	12.50 to 13.00
Malleable	11.75 to 12.25
Stove plate	10.50 to 11.00

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa.; $1.20 to Harrisburg and Steelton, Pa.; $1.40 to Milton, Pa.

Buffalo

Structural Contract Awarded. — Pig Iron Market Quiet.

Jan. 16.

Pig Iron.—The usual January quietness still holds sway in the market, and buyers are showing little or no interest in pig iron purchases. The urgency with which consumers have been calling for iron, however, is still quite prominent, and furnaces are shipping to their fullest extent. Apparently $13 iron has disappeared from the market, even in the low silicon grades of foundry. The prevailing price on No. 2X foundry in this district is being held at $13.75. The ruling prices for the week, f. o. b. furnaces, are substantially as follows:

No. 1X foundry	$13.75 to 14.25
No. 2X foundry	13.75 to 14.00
No. 2 plain	13.50 to 13.75
No. 3 foundry	13.50
Gray forge	13.25 to 13.50
Malleable	14.00 to 14.50
Basic	14.50 to 14.50
Charcoal	15.75 to 17.25

Finished Material. — Prices remain firm even though the business since the holidays has been quiet in all lines except the wire nail and wire products line. The buyers here do not look for the January buying movement to manifest itself for another week, owing to the inventory period. There has also been an improvement over last week in the placing of contracts for bar material and small shapes at the higher prices. Apparently these purchases were made to be protected against further increases. Bars are bringing as a minimum a base price of 1.15c, for first quarter delivery, and after April 1, for second quarter, the price being asked is 1.20c base. On shapes and plates the minimum is a 1.20c base for first quarter deliveries and 1.25c to 1.30c base for second quarter. Wire nails hold at 1.55c base to jobbers and on wire products the price remains at 1.35c.

The Lackawanna Bridge Co. has been awarded the contract for the 4,000 tons of structural material, for the new Marine National Bank building, to be erected here.

Old Material.—The situation for the past two weeks, between both dealers and consumers, seems to be that of a waiting game. Heavy ordering would swing the market upward and by waiting, in some quarters, it is felt there may be a decline in a few of the lines. The dealers, on the other hand, are aware that there is not much available scrap in the market. The tonnage purchased from the mills in the past week has been light, as the producers seem to be holding out for prices which make it inadvisable to handle the material at the present prices. A slight advance of from 50 cents to $1 per ton in some of the lines would develop a considerable tonnage. The extreme cold weather has had its bearing on the market. The railroads are not picking up their scrap, and it is more difficult to get it out of the yards than it was a month ago. Back of the present indecision, it is, however, the general impression that as the year advances it will develop into a big tonnage year.

The prices per gross ton, f. o. b. Buffalo, are substantially as follows:

Heavy melting steel	$12.75 to 13.00
No. 1 railroad wrought scrap	14.00 to 14.50
No. 1 R. R. and mch. cast scrap	13.75 to 14.00
Old steel axles	18.75 to 19.00
Iron axles	22.00 to 22.50
Car wheels	12.75 to 13.00
Railroad malleable, scrap	12.75 to 13.25
Wrought iron and soft steel turn.	7.50 to 7.75
Cast iron borings	6.75 to 7.00
Low phosphorus steel scrap	15.75 to 16.25
Old iron rails	15.00 to 15.50
Tank iron	10.00 to 10.50
Boiler plate, sheared	14.00 to 14.25
Pipe and tank	10.00 to 10.50
Stove plate	9.75 to 10.25
Sheet iron	7.00 to 7.50
Locomotive grate bars	11.00 to 11.25

St. Louis

Round Tonnage of Wellston Car Wheel Iron Sold.

Jan. 15.

Pig Iron. — Six thousand tons of Wellston, O., car wheel iron were sold to a local melter Saturday for shipment over the first half. A sale of 1,800 tons of northern foundry was made for delivery at Waterloo, Ia., during the first half. With these exceptions, business has been very dull in the St. Louis territory, for several days, and there is little in the outlook to encourage. Buying has been in small lots, and mostly for immediate shipment. Southern No. 2 is quoted all the way from $10 to $11, Birmingham, and northern iron remains stationary at $13 to $13.50, Ironton. Our tabulated prices on southern iron, delivered, to which the freight of $3.75 from Birmingham has been added, follow:

Southern	No. 1	$14.50 to 14.75
Southern	No. 2	14.00 to 14.25
Southern	No. 3	13.50 to 13.75
Southern	No. 4	13.00 to 13.50

Coke. — Transactions in coke have been very few and only for small tonnages, with prices remaining as follows:

We quote 72-hour Connellsville foundry grades, $2.00 to $2.40 for first half of 1912; 72-hour foundry, $2.00 to $2.25 on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.75 to $1.80; best 72-hour Virginia foundry, $2.15 to $2.25; 48-hour Virginia furnace, $1.75 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Structural Material. — The Cotton Belt Railroad Co. placed an order with the Indiana Bridge Co., at Muncie, Ind., Monday for about 300 to 400 tons of structural steel to be used in replacing the roof on a machine shop of the company that burned at Pine Bluff, Ark., recently.

Old Material.—Quotations on scrap iron remained unchanged as follows, with very little trading reported:

GROSS TONS.

Old car wheels	$13.00 to 13.50
Old iron rails	14.00 to 14.50
Re-rolling rails (5 feet and over)	12.00 to 12.50
Old steel rails (3 feet and under)	10.75 to 11.25
Light section relayers (45 lb. and under) subject to inspec.	20.00 to 21.00
Re-laying rails, subject to inspec.	23.50 to 24.00
Frogs, switches and guards	10.00 to 10.50
Heavy melting steel	10.50 to 11.00
Shoveling steel	10.00 to 10.50

NET TONS.

No. 1 railroad wrought	$10.50 to 11.00
No. 2 railroad wrought	9.50 to 10.00
Arch bars and transoms	13.00 to 13.50
Knuckles, couplers and springs.	9.00 to 9.50
Shafting	13.00 to 13.50
Iron car axles	17.00 to 17.50
Steel car axles	15.00 to 15.50
Locomotive tires	14.00 to 14.50
No. 1 country wrought	8.75 to 9.00
Pipe and flues	7.50 to 8.00
Tank iron and cut boilers	7.00 to 7.25
No. 1 cut busheling	8.50 to 8.75
No. 2 cut busheling	6.00 to 6.25
Cast and mixed borings	5.25 to 5.50
Machine shop turnings	6.25 to 6.50
Railroad malleable	9.50 to 10.00
Agricultural, malleable	8.50 to 9.00
Stove plates	8.75 to 9.25
Angle splice bars (iron)	10.50 to 11.00
Angle splice bars (steel)	9.25 to 9.50

Hilles & Jones, Wilmington, Del., have completed the installation of large bending rolls in the plant of the Henry Vogt Machine Co., Louisville. Their capacity is 16 feet wide and 3 to 4 inches thick.

Birmingham

Pig Iron Exports to England and Austria.—Cast Iron Pipe Contracts.

Birmingham, Ala., Jan. 15.

Pig Iron. — The advance recently made in quotations on certain brands has not been fully maintained, although the feature of the market for the week just ended was the tonnage sold for export. The sale of 10,000 tons of local iron to American consuming interests in Hull, England, is confirmed, and the purchase of an additional 25,000 tons is accredited to Austrian consumers. In neither of the sales referred to is the price consideration known, but the fact that such tonnage will be forwarded to other than regular territory is not without effect on general conditions existing. It is understood that forwardings against the tonnage mentioned will be at such a rate as the facilities for export afford, the entire tonnage being moved in from three to five months. So far as the regular trade is concerned, recent offerings have consisted of carloads and lots of 150 to 500 tons each, all for comparatively early delivery. This demand has been met to quite an extent by the warrant iron offered, but no concessions from a basis of $10 at Birmingham for No. 2 foundry were made. The majority of the producing interests are adhering to an advance of from 25 to 50 cents per ton over the $10 price for deliveries covering the second quarter, but except in those cases where furnace operations are soon to be changed, it is understood that any first half tonnage has been refused at a flat $10 schedule. The recent inquiry for any delivery has been very light, and the movement from furnace yards is short of expectations. However, the weather conditions for the past ten days have materially affected foundry operations and in some cases, operations have been entirely suspended.

It is understood that the new business placed in the foundry trades so far this year is very gratifying. Especially is this true of the cast iron pipe industry, in which a very attractive tonnage has just been placed for production at a local plant. Negotiations for some tonnage of basic iron are understood to be under way, which will probably be closed during this week. Four of the furnaces now in blast are producing basic, but probably less than 10 per cent of the output is in excess of the local consumption. An aggregate of 750 tons of charcoal iron has just been sold at figures around those quoted, and announcement is made that one stack recently blown out for relining will be put back in blast at the earliest date practicable. We continue to quote the market as follows, per gross ton, f. o. b. cars at Birmingham district furnaces, for any delivery during the first half of this year, viz.:

No. 1 foundry, and No. 1 soft	$10.50
No. 2 foundry	10.00
No. 3 foundry	9.50
No. 4 foundry	9.25
Gray forge	9.25
Standard basic	$10.00 to 10.50
Standard charcoal iron	22.00 to 23.00

These prices are per gross ton f. o. b. cars at Birmingham district furnaces.

Cast Iron Pipe.—It is understood that the American Cast Iron Pipe Co., of Birmingham, will furnish the water pipe requirements at Minneapolis, Minn., and at Muskogee, Okla., although the extent of this tonnage is not definitely known. An attractive tonnage of water pipe is to be placed by the city of Macon, Ga., on Jan. 23, and the city of Albany, Ga., is understood to be in the market for a round tonnage of gas pipe. Requirements for maintenance that have been placed in the past week are very satisfactory, and of course, by reason of the size of the individual engagements, the prices received are considerably higher than that of large contracts. The actual movement has been further reduced by the continuance of excessive cold, and operations have been seriously affected by the same cause. We continue to quote the market as follows, for water pipe per net ton, f. o. b. cars here, viz.: 4 to 6-inch, $23; 8 to 12-inch, $22; over 12 inches, average $21, with $1 per ton extra for gas pipe. Special fittings are quoted at from $45 to $55 per net ton at foundry owing to the size and nature of the casting.

Old Material.—Dealers asking prices are about at the same level as at the time of last report with very little change in the aggregate movement. The consumption at local mills continues steady and bargain lots of wrought and steel grades are readily disposed of. The aggregate accumulation has not increased to any appreciable extent, and is considered lower than for some years past. We quote the market as fairly correctly represented at the following schedule, per gross ton f. o. b. cars here, viz.:

Old iron axles (light)	$12.50
Old steel axles (light)	12.00
Old iron rails	11.50
No. 1 R. R. wrought	10.00
No. 2 R. R. wrought	9.50
No. 1 country	6.50
No. 2 country	6.00
No. 1 machinery	9.00
No. 1 steel	8.50
Tram car wheels	8.50
Standard car wheels	10.00
Light cast and stove plate	6.50

British Market

Pig Iron Prospects Good and Finished Material Advances.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,
Birmingham, Eng., Dec. 30.

Pig Iron.—The new year's tone in the iron trade is as optimistic as it can be, although this has not been fully reflected in the prices this week. The influence of the speculator is now being felt more strongly. Today's prices range about 50s ($12.24), for No. 3 warrants, though makers ask 6d more. The figure for one month for warrants is 50s 10d ($12.44), and for three months 51s 5d ($12.58). It is significant that makers are not disposed to follow speculators in their price fluctuations, as they have full order books and a ready market for all they can make. The trade has benefited considerably from the improved American advices. Stocks continue to reduce, though somewhat more slowly than of late.

Finished Material. — The principal event of the week has been the advance of 10s per ton in marked Staffordshire bars, making the selling figure £8 10s. This is the first movement in best iron since July, 1908, when prices were reduced 10s per ton. The advance has of course been foreseen, the only real question being as to whether the rise would come on or before the quarterly meeting next week. Unmarked iron continues to rise, £7 being now readily obtained. The mills are full of work, and consumers are now much more concerned as to date of delivery than the price to be paid. For galvanized sheets, there is an improving demand. In the steel trade, everybody expects an excellent year. Billets are now quoted £5 7s 6d for Bessemer with £5 10s for Siemens, and, with a strong demand, prices will go still higher shortly. Continental steel is no longer available, except in small lots on old contracts. As already announced in this column strenuous efforts have been made, especially by one large Birmingham firm of importing merchants, to bring American steel over here. At one time, the effort looked like succeeding, but it has failed this time, because the shipping companies do not

happen to be wanting cargoes. Previously, they have been able to undertake freights from Pittsburgh to Great Britain for 15s. This time they ask 25s, and business on this basis is impossible. Now that American billets have commenced to rise in price, it is recognized that the prospects of getting American steel over here are not bright.

METAL MARKETS

St. Louis

Jan. 15.

Lead and Zinc.—The zinc and lead production was reduced more than 75 per cent last week as a result of bitter weather in the Missouri-Kansas-Oklahoma district, and in some instances buyers experienced difficulty in obtaining ore for their immediate needs.

Zinc blende reached a top price of $50 a ton on an assay base of $47 a ton for 60 per cent qualities, ranging down to $42 a ton.

Calamine brought $22 to $26 a ton for 40 per cent grades, with choice lots selling as high as $30 a ton.

The production and shipment of lead ores was at a low ebb, with prices ranging from $56 to $60 a ton.

Chicago

Jan. 15.

New Metals.—Copper buying, which has been heavy, has tapered off to some extent and it is not felt that prices will go much higher at present. Casting copper is now 14½c, Chicago, and lake copper, 14¾c. Spelter is somewhat firmer and registered a net advance of $2 a ton during the past week. Lead is steady and unchanged in price.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 14¾c; casting, 14½c; smaller lots, ¼c to ¾c higher. Spelter, car lots, 6.45c; lead. desilverized, 4.40c to 4.45c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $8.00 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 43¾c. Cookson's antimony, 8¾c; other grades, 7½c to 8¼c.

Old Metals. — The extremely firm market for new copper is reflected in the old metal market and prices of copper and brass are strong. Aluminum is also active. Brass foundries are buying fairly liberally.

We quote, f. o. b. Chicago, as follows:

Copper wire, crucible shapes, 13½c, copper bottoms, 11c; heavy cut crucible copper, 11½c; heavy red brass, 12c; heavy yellow brass, 8¾c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 8¼c; brass clippings, 8½c; lead pipe, 5c; zinc scrap, 5.50c; scrap aluminum, 12c; tea lead, 3¾c; No. 1 pewter, 28c; block tin pipe, 37c; tin foil, 35c; linotype dross, 3¼c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; prime slab zinc dross, $80 to $85 a ton.

PREMIUMS OFFERED

On Billets and Sheet Bars by Anxious Consumers.

Pittsburgh, Jan. 17. (By wire.)—Premiums of from 50 cents to $1.00 a ton on billets and sheet bars for immediate shipment have been paid in a few instances by large users having requirement contracts with local mills which were unable to ship the tonnage specified for January delivery. Some of the smaller mills, however, are still in a position to take additional tonnage.

It is expected that the Sharon, Pa., plant of the Carnegie Steel Co., which has been idle for a long time, will be started on Monday of next week.

Build Steel Barges in Pittsburgh

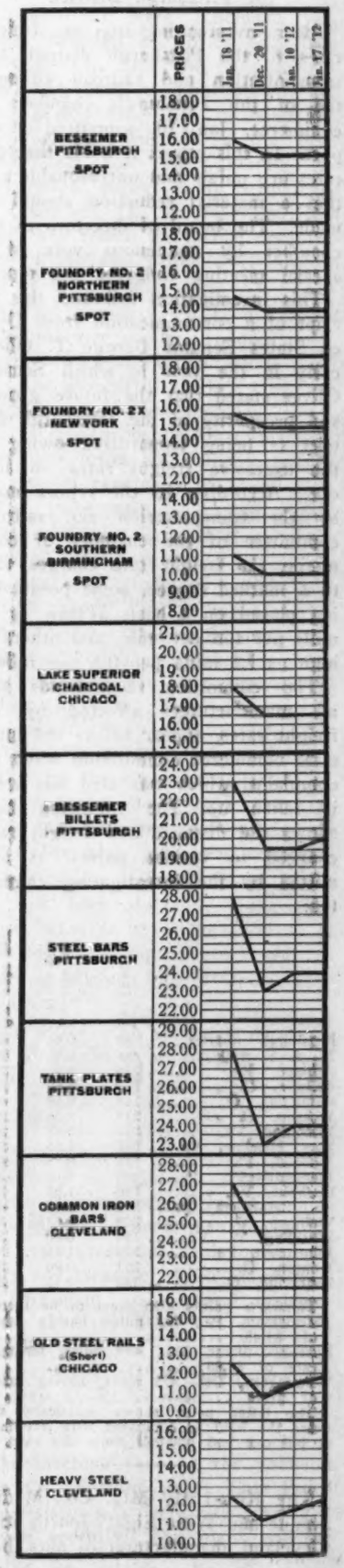
Pittsburgh, Pa., Jan. 17. (By wire.) —The Jones & Laughlin Steel Co. has been awarded a contract by the Rodgers Sand Co., of Pittsburgh, for two steel barges. The barges will be 26 x 130 feet and 9 feet deep, involving 150 tons of steel each, with a capacity for 600 tons. With the exception of the steel barges of the United States Steel Corporation and the Jones & Laughlin Steel Co., these are the only all-steel barges to be used on the local rivers for which contracts have been awarded so far.

Upson Nut Will Enlarge Its Plant

The Upson Nut Co., of Cleveland, which recently blew out its blast furnace, has had plans made for rebuilding the stack along larger lines. This will likely occupy three months. The company has also decided to begin at once installing the fifth open-hearth furnace of 60-tons capacity in its steel works. Provisions for the fifth furnace had been made when the plant was first built, the foundations for it having been laid.

M. A. Hanna & Co. recently blew in its second Detroit stack.

PRICE CHART



SEEK REDUCTION

Of Iron Ore Freight Rates Into the Pittsburgh District.

After investigating iron ore freight rates to the Pittsburgh district, the transportation and railroad committee of the Pittsburgh chamber of commerce, Jan. 10, supmitted a report. In this report it holds that the rates are unfair and unreasonable and that a material reduction should be made. The board of directors of the chamber by unanimous vote at a special meeting endorsed the report.

This investigation followed the receipt of a communication from United States Senator George T. Oliver early in the year in which Senator Oliver stated that the future growth and prosperity of the Pittsburgh district is being jeopardized owing to the excessive freight rates on iron ore. According to the report made by the transportation and railroad committee of the chamber of commerce, the freight rate charges vary to a marked degree, some points being placed on a basis as low as 2.8 mills per ton per mile, and others as high as 7.1 mills per ton per mile.

The committee recommends that all manufacturers affected by ore freight rates, appear before the interstate commerce commission when the complaint, which was filed last week, is taken up. The following table shows the distance and freight rates charged to various points, as submitted by the investigating committee:

	Av. Dist.	Av. rate per gross ton.	Av. rate per ton per mile in mills.
Pittsburgh district	160	0.96	6.0
M. & S. valleys	81	0.56	7.1
Ashland, Ky	256	0.90	3.5
Bellaire, O.	167	0.60	3.6
Columbus, O.	124	0.50	4.0
Jackson, O.	219	0.62½	2.9
Josephine, Pa.	228	0.85	3.7
Max Meadow, Va.	537	1.55	2.9
Midland, Pa.	115	0.78	6.8
Punxsutawney, Pa.	181	0.60	3.3
Roanoke, Va.	550	1.55	2.8
So. Bethlehem, Pa.	353	1.45	4.1
Wellston, O.	208	0.62½	3.0
Wheeling, W. Va.	164	0.60	3.7
Johnstown, Pa.	224	1.16	5.2
Ironton, O.	251	0.90	3.6
Zanesville, O.	146	0.55	3.8

Tidewater points also seem to be favored:
Philadelphia, Pa., 422 miles, having rate of $1.45 ..... 3.4
Sparrows Point, Md., 470 miles, having rate of $1.50 ..... 3.2
Wilmington, Del., 471 miles, having rate of $1.45 ..... 3.1
The latter point shows practically three times the haul as compared with Pittsburgh, at but one and one-half times the rate.

The Kirk-Latty Mfg. Co., Madison avenue and West Eighty-fourth street, Cleveland, manufacturer of nuts, bolts, screws, juvenile vehicles, etc., has increased its capital stock from $150,000 to $300,000. It plans to overhaul its entire plant and make extensions and improvements where necessary. Considerable new machinery and equipment will be required but specifications for this have not yet been prepared. Some additional floor space may also be provided.

MODERN FURNACE

To Be Built at Port Henry, Replacing Present Old Stack.

A new modern blast furnace is to be erected by the Northern Iron Co. to replace its present furnace at Port Henry, N. Y., which has been in service for about 40 years. The new furnace will be 17 x 80 feet in dimensions, or somewhat taller than the present stack, which is 17 x 69 feet, and it will have a daily capacity of 225 to 250 tons. It is planned to assemble all the construction materials upon the site before the tearing down of the present stack is inaugurated in April, and in this way it is believed the new furnace can be completed and blown in around July 1. The present equipment of stoves, blowing engines and a turbo-blowing unit is quite complete and will not be added to except possibly to extend the boiler capacity. No contracts for the construction have yet been placed. The Port Henry furnace is usually run on foundry, forge and basic irons, using Port Henry ores, but it is planned that the new furnace will produce some malleable. The Northern Iron Co. also operates a furnace at Chateaugay on low phosphorus pig iron.

Completing Alternate Stack

Lining up of the alternate stack under erection by the Alan Wood Iron & Steel Co., at Swedeland, Pa., is now in progress. It is expected that the connections will be completed and the stack ready for the blast about March 1 or a little later. The new stack has a rated daily capacity of 450 tons, which will make the output of the whole furnace plant about 700 tons daily. It is expected to blow in the new stack when completed. The No. 1 stack was recently relined. The company recently put in operation a fourth open-hearth furnace.

A report that the Pennsylvania railroad will construct new shops near Chicago is officially denied.

MODERATE BUYING

Of Pig Iron in the East—Pipe and Structural Awards.

New York, Jan. 17. (By wire.)—The iron market is quiet in this district. The total inquiries for lower New York, New England and New Jersey are about 10,000 tons, including 1,000 to 1,500 of foundry iron for a Connecticut valve interest, 1,250 to 1,750 of foundry for a western railway equipment maker, 1,000 tons for the Delaware, Lackawanna & Western, New York Central and Erie railroads, and several thousand for the International Pump Co. A Newark buyer has closed for 1,000 tons. There is a fair movement of Virginia grades to New England at $16, delivered, or $12.25, furnace. Low prices, down to $15.35, New England, are still noted. There is some revival of interest by sellers in the Corporation's inquiry for 6,000 tons of 50 per cent ferro-silicon. The recently deferred contract may now be placed. The steamer Amana, bearing 3,000 to 4,000 tons of ferro-manganese for this side, is four weeks overdue and concern is felt for her safety. Ferro-manganese is quiet.

The United States Cast Iron Pipe & Foundry Co. took 1,280 tons of cast iron pipe for Grafton, W. Va., at $21.70, delivered. Greater New York opens bids tomorrow on 3,800 tons. Fifteen hundred tons of pipe in small lettings are pending.

Finished material conditions show less vigorous buying. Prices are quite firm and specifications are reported satisfactory. Structural awards of the week include the Marine National Bank, Buffalo, 4,000 tons, to the Lackawanna Bridge Co., and 2,000 tons to the American Bridge Co. for the Norfolk & Western.

Charles T. Wills has the general contract for a loft for the Hoffman House site, 1,700 tons. The V. J. Hedden Sons Co. has 400 tons for a pier for the Central of New Jersey. The steel for the Canadian Pacific railroad shops at Calgary, Alberta, 3,500 tons, has been divided between the Canadian Bridge Co. and another Dominion shop. A considerable portion of the plain material will be rolled by the Carnegie Steel Co. The Oil Well Supply Co.'s warehouse at Los Angeles, 1,700 tons, has gone to the Marana Construction Co. A loft for the Nobloch Construction Co., this city, 1,000 tons, has gone to A. E. Norton Co.

LOWER IRON FREIGHTS

From South Endorsed by the New England Foundrymen—Annual Meeting.

New England foundrymen are backing the movement for lower freights on pig iron from the Birmingham district which southern producers are now agitating before the railroads. At the sixteenth annual meeting of the New England Foundrymen's Association, held at the Exchange Club, Boston, Jan. 10, a report from a committee of the association, appointed at the December meeting to consider the matter of placing before the railroads the question of lower freights from the south, was submitted. The report was accepted as progressive and the committee was continued in power and instructed to further cooperate with the associations interested in the movement with the idea of bringing about a reduction of the rates in question.

President H. E. Wetherbee, of the association, presided at the meeting.

The nominating committee made its report for officers for the ensuing year, as previously stated in THE IRON TRADE REVIEW, and the vote was unanimous for the ticket as presented, as follows: President, Chas. L. Newcomb, Deane Steam Pump Co., Holyoke; vice president, Robt. C. Bird, Broadway Iron Foundry, Cambridge; treasurer, Geo. H. Lincoln, G. H. Lincoln & Co., South Boston; secretary, Fred F. Stockwell, Barbour-Stockwell Co., Cambridge. Executive committee:—Chas. L. Nutter, Old Colony Foundry Co., East Bridgewater; Chas. A. Reed, Hickman, Williams & Co., Boston; J. C. Hosford, Magee Furnace Co., Chelsea; D. K. Bartlett, Builders' Iron Foundry, Providence; A. L. Clark, American Brake Shoe & Foundry Co., Norwood.

President Wetherbee then made a few remarks regarding the association, after which he requested Messrs. Carpenter and Shaw to escort the newly elected president to the chair. After the committee had performed its duty, Mr. Newcomb thanked the members in a very pleasing manner for the honor bestowed upon him, and asked for the co-operation of the members in making the coming year successful for the association. An application was received from the Nicholson Sand & Supply Co., Providence, and this company was unanimously elected to membership. The report of the secretary showed the membership of the association to be 130 firms. The treasurer reported a large balance on hand and all bills paid.

The banquet in the evening was attended by 125 members and guests. H. E. Wetherbee extended cordial greetings to the guests and presented Chas. L. Newcomb, of Holyoke, as toastmaster. The principal speakers of the evening were Rev. John S. Lyon and Dr. P. T. O'Reily, both of Holyoke. The party was also entertained by vocal and instrumental music furnished by professional talent.

GARY DENIES CHARGES

And Asserts Steel Corporation is Fair to Employes in Reply to Louis D. Brandeis.

Judge Elbert H. Gary, in a statement issued on Jan 16, denied that there was any foundation to the charges of Louis D. Brandeis concerning the Corporation's treatment of its employes, Judge Gary said in part:

I believe, taking everything into account, the treatment accorded by our Corporation to its employes compares favorably with that of any line of industry in this country or any other country at the present time or any period in the history of the world.

We are paying 25 per cent higher wages than we were when the Corporation was organized, and we have spent and are spending millions to prevent accidents in the works, to improve the sanitary conditions, to furnish voluntary relief in case of accident, regardless of legal liability, and for pensions to superannuates. We have standing committees constantly engaged in welfare work.

We have largely abandoned seven-day work and have, to a large extent, eliminated 12-hours-a-day work. It is true there is considerable of the latter still in force, but this is largely because the employes prefer 12 hours a day in order to receive a larger compensation. This question, therefore, comes back to the amount paid for labor. We could, of course, reduce the hours of labor by reducing the wages. Whether or not we are paying as much as we ought to pay is a question always up for consideration. It is well known we have in the past declined to reduce wages when many of the others were making reduction. Above all, we are trying to satisfy our employes that they are receiving fair and liberal treatment; and I think they appreciate our efforts.

Soo Tonnage.—During the season of 1911, 30,731,235 tons of iron ore passed through the canals at Sault Ste. Marie, Michigan and Ontario, compared with 41,603,634 tons in 1910. In 1911, 18,673 vessels were locked through, compared with 20,899 in 1910.

TO BUILD WORKS

Brier Hill Steel Co. Plans to Begin Construction.

Negotiations were concluded yesterday between the Brier Hill Iron & Coal Co. and the Youngstown Steel Co., both of Youngstown, and the Thomas Steel Co., of Niles, O., whereby the formation of the Brier Hill Steel Co. was assured. Incorporation papers were dispatched to Columbus, O., for recording, and upon their return the formal organization of the new valley steel concern will be completed.

No decision has yet been reached as to the size of the proposed open-hearth steel plant which will be built near the Brier Hill stacks. However, it appears now that the steel works will include probably eight furnaces, provisions being made for increasing the number eventually to 12.

The Brier Hill and Youngstown Steel companies own adjoining blast furnaces located in the west end of the city, with combined annual output of about 250,000 tons of pig iron. About 15 or 18 years ago land surrounding the furnace plants was purchased with the ultimate intention of some time affording a steel plant site. The construction of the Ohio steel works, affording a market for the output of these stacks, delayed the project. Now that the valley merchant iron market has narrowed the plan has been revived.

The size of the steel plant has not been definitely determined as yet, whether it will be eight or 12 furnaces. The capital stock will be placed at between $10,000,000 and $15,000,000.

The Brier Hill company owns its own Lake Superior ore mines and Connellsville coke works. Its officers are: President, H. H. Stambaugh; vice president, John Tod; secretary and treasurer, R. C. Steese; general manager, J. G. Butler Jr. The officers of the Youngstown Steel Co. are: President and general manager, E. L. Ford; vice president, Paul Jones; secretary and treasurer, John Stambaugh. The president and general manager of the Thomas Steel Co. is W. A. Thomas, while the vice president and treasurer is C. G. Thomas, and the secretary C. R. Thomas.

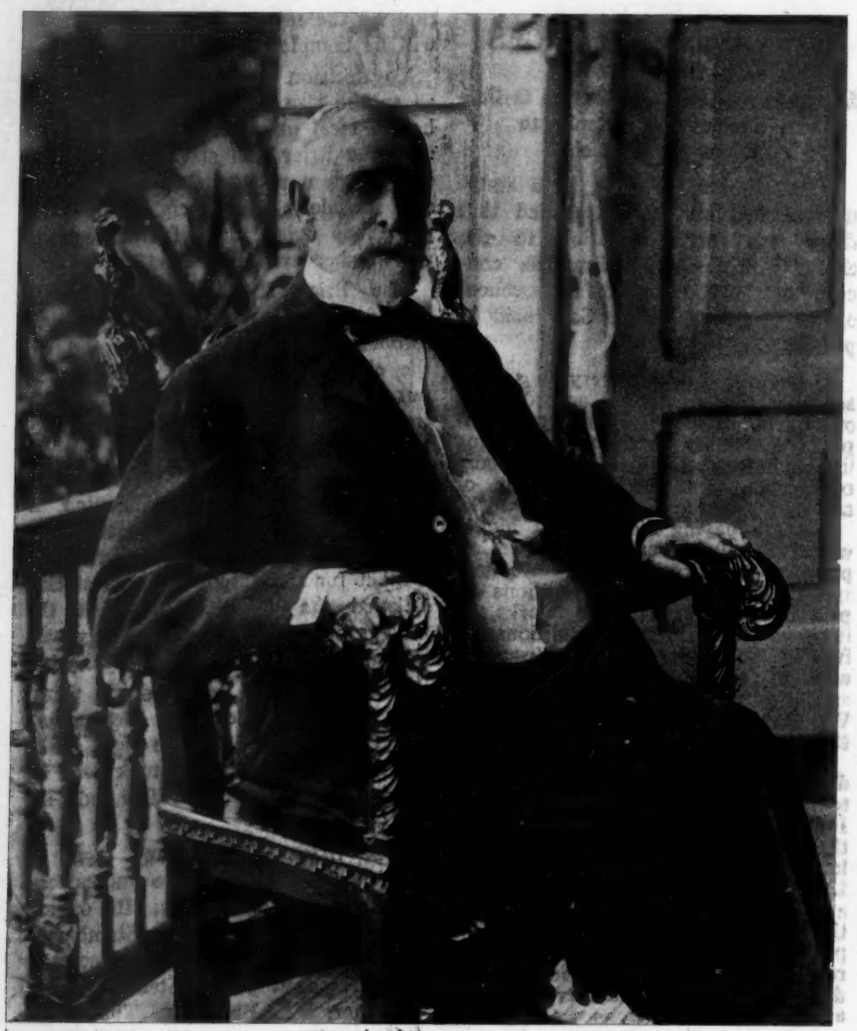
The machine shop of the Johnson Gear Co., Folsom street, San Francisco, Cal., was seriously damaged by fire recently. The plant will be rebuilt.

DEATH OF GEORGE BROOKE

Passing of a Greatly Beloved Eastern Manufacturer.

George Brooke, one of the oldest and most eminent iron masters of Pennsylvania, died Jan. 15, at his home in Birdsboro, Pa., aged 94.

Mr. Brooke was born in Birdsboro, July 26, 1818. Both he and his brother, Edward, were quite young at the time of their father's death, and the iron works were leased while their education was being completed. At the age of 19, Mr. Brooke with his brother Edward, who had just passed his majority, took over the management of the properties, which then included two forges, with an annual output of 200 tons. At the outset, the brothers adopted the name of E. & G. Brooke, and continued under this name until after the death of Edward Brooke, Dec. 25, 1878, when the various interests were incorporated into two companies, the E. & G. Brooke Iron Co. and the E. & G. Brooke Land Co. From the beginning, the business was uniformly successful, and the growing demands of the iron business early necessitated a furnace of improved type. In 1846, on the site of the old Hampton forge, a small charcoal furnace was erected. In 1852, an anthracite furnace was erected and continued in operation for a number of years. Both these stacks have long since been dismantled. From the original forges were developed charcoal, then anthracite blast furnaces, the first two furnaces which formed the nucleus of the present plant being built in 1871 and 1873. In 1848, the Brooke interests established the Birdsboro Nail Works, which became one of the most important branches of their manufacturing activities. George Brooke was president of the Birdsboro Steel Foundry & Machine Co., under which name the Brooke foundry operations are carried on. He was also a director of the Wilmington & Northern railroad, the line over which the ore requirements for the furnaces at Birdsboro are shipped. Mr. Brooke had numerous outside interests, being connected with two financial institutions at Reading, and he was also one of the founders of the First National Bank, at Birdsboro, of which he was at one time president. He was a member of the Union League and Manufacturers' club, at Philadelphia, also the Society of Colonial Wars and the Sons of the American Revolution.



GEORGE BROOKE

Mr. Brooke had always taken great interest in the welfare of the borough and was for many years president of the town council, a member of the borough school board and a director of the library maintained by the St. Michael's Episcopal church. Almost from its establishment he had been a vestryman of this church. Of George Brooke some one has said that his many years "have been filled with varying experiences, but withal have been flavored with a due measure of sunshine, the brightest ray of which to him must be the reverence and affection of his townspeople, which is almost filial."

PROP WITHDRAWN

And Los Angeles Strikers Are Returning to Work.

The strike of metal trades artisans at Los Angeles, from which developed the dynamiting of the Los Angeles Times and the Llewellyn Iron Works, has been called off. No public notice of the termination of the strike has been made, but the men have been told to take what jobs they could get. The collapse of the strike has been brought about by the refusal of San Francisco unions to furnish more money for the support of the strikers. Molders were the first to take action ending the strike, the other trades quickly following.

For Coming Congress.—The eighth International congress of Applied Chemistry, which will meet in Washington and New York City in September, 1912, has prepared a pamphlet for distribution among prospective authors of contributions to the congress. This contains rules and suggestions to be followed in writing the papers to be presented. Bernhard C. Hesse, 25 Broad street, New York City, is secretary of the congress.

The Dake Engine Co., Grand Haven, Mich., has increased its capital from $20,000 to $80,000.

DEAL IN DETAIL

Particulars of Lease of Warwick Furnaces to Eastern Steel Co.

Stockholders of the Warwick Iron & Steel Co., at a meeting, Jan. 16, held in Philadelphia, ratified the 99-year lease of their blast furnace plants entered into by their directors with the Eastern Steel Co. In the call for proxies issued in connection with this meeting, the official details of the lease were made public for the first time. The notice reads as follows:

Negotiations have been in progress for some time between your directors and the directors of The Eastern Steel Co. in regard to the lease of your plant for a period of 99 years, which includes an option to purchase upon specified terms.

The Eastern Steel Co. has finally made a proposition which your directors feel that it is to the best interest of our stockholders to accept. This offer practically assures the stockholders an 8 per cent dividend. The return to the stockholders under the lease will be approximately as follows: 8 per cent for three years; then a distribution among stockholders of $250,000, which is equivalent to $1.66 per share, and after such payment a dividend of 7 per cent yearly upon the par value of the stock. If The Eastern Steel Co. avails itself of an option in the lease to pay an additional sum of $250,000 at any time before the expiration of five years, there will be another distribution of the sum of $250,000, making a second payment of $1.67 per share, and the rate of dividend thereafter will be 6 per cent upon the par value of the stock.

The lease also provides that The Eastern Steel Co. is to have the option to purchase the property of your company at any time within 15 years at a total price of $2,000,000; of which, however, the respective payments of $250,000 before mentioned would be on account.

If after the payments by that company, as above, aggregating $500,000, it should exercise its option to purchase as aforesaid, the stockholders would receive par for their stock at that time, making, with the two payments above mentioned, a total of $13.33 per share.

In view of the narrowing market for steel-making irons made in merchant blast furnaces, due to the building of furnaces by the steel companies, and therefore bringing about excessive competition in all grades of pig irons, your directors believe that the stockholders would do well to authorize this lease and option to purchase, which practically assures the equivalent of an 8 per cent guaranteed dividend.

Will of R. T. Crane.—Of the $10,000,000 disposed of in the will of the late R. T. Crane, more than $2,000,000 is bequeathed to charity. Among the gifts are $1,000,000 as a pension and disability fund for the benefit of the employes of Crane Co.; $1,000,000 for helpless mothers and children and several smaller sums for other charitable purposes. The will, which was filed in probate in Chicago on Jan. 15, recites that Mr. Crane's daughters and son, Herbert P. Crane, had been provided for before Mr. Crane's death. Charles R. and Richard T. Crane are made residuary legatees and are intrusted with carrying on the business of Crane Co.

Ask to Sell Platt Iron Works as Whole

Authority to sell the Platt Iron Works, Dayton, O., as a going concern is sought in federal court at Cincinnati through a petition filed by the three trustees. The sale is to be subject to certain liens covering certain indebtedness. The trustees were empowered to renew for four months receivers' certificates dated Sept. 18, and maturing Jan. 15, for a total of $25,000. A creditors' meeting will pass upon the fees claimed by the former receivers.

Sloss-Sheffield Co. Will Make Renewals

The Sloss-Sheffield Steel & Iron Co. has decided to expend $110,000 upon improvements and renewals at its blast furnaces and coal mines. The Hattie Ensley stack will be relined, the stoves relined, machinery overhauled and a new blowing engine and two Wickes boilers installed. While the Hattie Ensley is out, the stack at Florence, Ala., will be relighted.

Billiton Tin Sale

The sale of Billiton tin by private tender on Jan. 10 brought 112 florins, equal to about £186, c. i. f. Holland. This compares with 120½ florins on Dec. 6, equal to £200, c. i. f. Holland; with 112¼ florins on Nov. 9, equal to £186; and with 109½ florins on Oct. 4, equal to £181 12s 6d.

The strike of the boilermakers and helpers at the Brooks works of the American Locomotive Co. having been declared off officially, the 800 men are expected to return to work today. The strike was declared Oct. 27.

Benton Harbor, Mich., intends to build a pumping station in connection with its water works.

SPLENDID SHOWING

Made by Corporation's Unfilled Tonnage—Largest Increase Yet Reported.

The immense total of 942,806 tons was added to the unfilled orders of the United States Steel Corporation during the month of December, as shown by the monthly report issued Jan. 10, and briefly referred to in THE IRON TRADE REVIEW of Jan. 11. This is the largest increase within the period of a month reached since the plan of issuing monthly statements of orders on hand was inaugurated, July 31, 1910, and it brings the total tonnage on hand Dec. 31, 1911, to 5,084,761 tons, which is the highest point touched since Sept. 30, 1907, excepting the last quarter of 1909 and the first quarter of 1910.

An analysis of the figures for December shows that the bookings of the leading interest were approximately 38,000 tons daily in excess of its shipments for the 25 working days of the month. Operations of the Steel Corporation in December were well around an average of 70 to 75 per cent of capacity and the holiday cessations were unusually light. Assuming, therefore, that the tonnage manufactured represents approximately the tonnage shipped, which seems to be the case under present conditions, when stocks are not being greatly accumulated, it would signify that the average daily bookings of the Steel Corporation in December were in excess of 70,000 tons. The official figures for December indicate that the apex of the buying movement in finished products for the largest interest was reached in that month as had been foreshadowed by reports issued from time to time over that period.

Since the plan of making monthly statements of unfilled tonnage has been followed by the Corporation, the statements of business on hand, the tonnage and percentage of increase or decline from the previous month, have been as follows:

Date.	Total.	Change, tonnage.	Change, per cent.
Dec. 31, 1911....	5,084,761	942,806+	23.24+
Nov 30, 1911....	4,141,955	447,627+	12.06+
Oct. 31, 1911....	3,694,328	83,011+	2.25+
Sept. 30, 1911....	3,611,317	84,668—	2.34—
Aug. 31, 1911....	3,695,985	111,900+	3.33+
July 31, 1911....	3,584,085	223,027+	7.16+
June 30, 1911....	3,361,058	247,871+	7.96+
May 31, 1911....	3,113,187	105,617—	3.28—
Apr. 30, 1911....	3,218,704	228,597—	6.63—
Mar. 31, 1911....	3,447,301	46,758+	1.37+
Feb. 28, 1911....	3,400,543	289,624+	9.31+
Jan. 31, 1911....	3,110,919	436,162+	16.30+
Dec. 31, 1910....	2,674,757	85,636—	3.09—
Nov. 30, 1910....	2,760,413	111,536—	3.88—
Oct. 31, 1910....	2,871,949	286,157—	9.12—
Sept. 30, 1910....	3,158,106	379,088—	10.74—
Aug. 31, 1910....	3,537,128	433,803—	10.92—
July 31, 1910....	3,910,931	286,863—	6.72—
June 30, 1910....	4,257,794	.....	....

OIL FIELD TUBULAR GOODS

Of Youngstown Sheet & Tube Co. Will be Sold by New Concern.

George E. Day, general manager of sales Youngstown Sheet & Tube Co., Youngstown, and chairman of the board of the Continental Supply Co., the incorporation of which was announced in THE IRON TRADE REVIEW, Jan. 11, has issued the following statement concerning the newly organized company:

The object of the company is to establish stores and warehouses in all the various oil fields of this country and Mexico, for the distribution of supplies of all kinds to oil well drillers and contractors, such as tubular goods and fittings, engines and boilers, wire rope and cordage, drilling tools, gas engines and power pumps, etc.

Arrangements have already been made with the Youngstown Sheet & Tube Co. for the sale of its full line of oil country tubular goods.

The executive headquarters of the company will be located at St. Louis, the main office at Youngstown. Stores and warehouses will be established at central points in the oil fields of Ohio, Pennsylvania, West Virginia, Illinois, Oklahoma, Texas, Louisiana and Mexico, and a full corps of store managers and field men, experienced in this line of work, has been arranged for.

Officers of the company are: Sumner Merrick, president; Alfred G. Heggem, vice president; Walter H. Adams, treasurer and assistant secretary; William R. Wilkinson, secretary; William K. Hughes, general sales manager. Directors—George E. Day, chairman; James A. Campbell, Richard Garlick, William E. Manning, Walter H. Adams, Sumner Merrick, A. C. Heggem, William K. Hughes, William R. Wilkinson.

Personals

W. C. Francis has been chosen secretary and manager of the Employers' Association of Oregon, succeeding H. S. Hastings, resigned.

J. W. C. Bullard, of the Bullard Machine Tool Co., Bridgeport, Conn., has sailed for Europe, where he will spend a year on business for the company.

H. D. Savage, treasurer and sales manager of the Ashland Fire Brick Co., Ashland, Ky., has been appointed aide-de-camp on the staff of Governor McCreary, of Kentucky, with the rank of colonel.

E. C. Humphreys, vice president of the Domhoff & Joyce Co., Cincinnati, has severed his connection with that company to enter another field. His successor has not as yet been announced.

C. H. Domhoff, senior member of the firm of Domhoff & Joyce, left Cincinnati Saturday for Los Angeles and the coast. He was accompanied by his family, and will remain during the winter season.

Wm. J. Coane has become second vice president of the Ajax Metal Co., of Philadelphia, and will act as sales manager for this concern. Mr. Coane was formerly Philadelphia branch manager for the Joseph Dixon Crucible Co.

Charles M. Lyle, for several years in charge of the southwestern territory for Manning, Maxwell & Moore, Inc., with headquarters in St. Louis, has resigned to accept the management of the St. Louis offices of Niles-Bement-Pond Co.

Frank B. Foster, for several years purchasing agent of the Midland Steel Co., and the S. Jarvis Adams Co., with their allied interests, has assumed his new duties as manager of sales of the S. Jarvis Adams Co., with offices in the German National Bank building, Pittsburgh.

Obituaries

Benjamin Haas, formerly district manager of the Joseph Joseph Bros. Iron & Steel Co., of Cincinnati, died Jan. 5 at his home in Pittsburgh.

George Hubert Loker, well-known in mining circles in St. Louis, died at his home, in that city, Jan. 12. Mr. Loker was president of the Meyer Mining Co. He was a native St. Louisan, 67 years of age.

Henry F. Lofland, general manager of erection and a director in the American Bridge Co., died Jan. 13, at Milford, Del., of tuberculosis, aged 47. He had been with the Bridge company since its organization, and was unmarried.

John Walter Young, second vice president of Chalmers & Williams, Inc., Chicago, died Jan. 14, at his home in Evanston, Ill. Mr. Young, who was 56 years old, had heart disease for several years. He was born in Brooklyn, N. Y., in 1855. He was graduated from the Brooklyn Polytechnic Institute and married Miss Byrd Frances Mater, of Colorado, in 1887. In 1890 he became vice president of the mining machinery firm of Fraser & Chalmers and from 1900 to 1907 was European manager for the Allis-Chalmers Co. Since 1907, he has been second vice president and director of Chalmers & Williams, Inc. Mr. Young was a member of the American Institute of Mining Engineers, the Montana Society of Engineers, the Chicago club, the Midwood of Brooklyn, Engineers of New York and the Alta of Salt Lake City, Utah.

Harbison-Walker Election

Pittsburgh, Jan. 16.—The annual meeting of the Harbison-Walker Refractories Co., Pittsburgh, was held Jan. 15, and the retiring directors were re-elected as follows: H. W. Croft, Hamilton Stewart, O. M. Reif, L. C. Turley, J. J. Brooks Jr., George W. Reese, H. F. Bigler, J. E. Lewis, T. H. Given, R. W. Harbison, T. L. Chadbourne Jr., Hay Walker Jr., Hay Walker, William Walker and N. McQuillen. The board reorganized at once and re-elected the old officials, as follows: H. W. Croft, president; Hay Walker and O. M. Reif, vice presidents; Hamilton Stewart, secretary, and William Walker, treasurer. The annual report for the year ended Sept. 30, 1911, which has already been published, and which showed a surplus for the year of $430,201 after dividends on both the preferred and common stocks, and a total surplus of $5,215,061, was distributed among the assembled stockholders.

Won't Install Shape Mills

The Alan Wood Iron & Steel Co. plant, Philadelphia, with works at Ivy Rock, Pa., officially denies the report that it is contemplating the installation of structural shape mills in its finishing capacity. The company has provided for itself an increased steel output through the construction of bridge connection between its blast furnaces at Swedeland, Pa., with its steel plant, thereby permitting the use of hot metal. Eventually it will probably install additional finishing capacity. These extensions, however, will probably be along the line of plates and sheets, its leading products at present.

Midvale Co's. Election

Stockholders of the Midvale Steel Co., at their recent annual meeting at Philadelphia, chose the following directors: Charles J. Harrah, James F. Sullivan, Axel Petre, Charles B. Dunn and Howard Sellers. The board organized by re-electing these officers: President, C. J. Harrah; vice president, J. F. Sullivan; secretary, H. M. Deemer; treasurer, John C. Dessalot.

Description of the World's Largest Ore Dock

This Steel and Concrete Structure Embodies Many Novel Features of Design—Great Ore-Handling Capacity and Loading Records

During the past 10 years the Great Northern railway has been steadily strengthening its ore-handling facilities. Its lines now reach all of the important points on the Mesabi range in Minnesota and at least for three years more it is assured of a heavy tonnage from mines leased to the United States Steel Corporation. Under the terms of the Hill ore lease, all of the ore mined by the Corporation from Great Northern properties must be shipped over the Great Northern railway. In 1912 the minimum shipments stipulated by the lease are to be 4,500,000 tons and in 1913 the minimum increases to 5,250,000 tons. This alone forms a handsome tonnage, but in addition, the Great Northern handles considerable ore from other mines and for independent companies.

In order to properly take care of these tremendous shipments, it has been necessary to greatly improve the loading and storage facilities at Superior, Wis. In accordance with this necessity the Great Northern last season placed in operation a new concrete dock equipped with 151 double ore pockets, with a capacity of 325 tons each. The total storage capacity of the dock is, therefore, 98,150 tons, but the structure, of course, is not designed primarily to store ore, but is a handling machine equipped to transfer it rapidly from cars into boats. This dock is one of the most notable additions to the ore loading facilities at the head of the lakes that had been built up to the present time and embraces a great many features not heretofore included in dock construction. In appearance the dock resembles the new dock of the Lake Superior & Ishpeming Railway, described in The Iron Trade Review, Jan. 4, but it is twice as large and radically different in design.

Concrete Columns.

Solid concrete columns are used to support the bins instead of the structural steel posts which have been employed heretofore. The walls of the bins instead of being merely partitions, act as beams and carry the weight of the ore, the bin floors being supported on I-beam purlins extending between the supporting walls or partitions, as shown in Figs. 2 and 5. The slope of the ore pockets is 47½ degrees, thus following the prevailing tendency to increase the pitch of the bin floors and facilitate the flow of the ore. The ends of the bins are made of semi-circular steel plates, as indicated in the various illustrations. This design not only adds to the stiffness of the structure and reduces the amount of steel necessary, since no framing is required to resist the ouward pressure of the ore, but also aids greatly in the rapid operation of the dock. The curved surfaces are effective in breaking up the arching of the ore body which frequently occurs and impedes the movement of the material. It has been found by experience that the arches form between the sloping floor of the bins and the end walls, seldom between vertical partitions, and on account of the diagonal surface presented to the ore by this construction, the arches are broken up in their incipient stages. This greatly reduces the amount of barring and poking necessary in the operation of the dock.

The dock is 1,900 feet 7½ inches in length from end to end of crib and the distance from the center of the first bent in the dock proper to the final bent at the outer end of the end tower is 1,856 feet 7½ inches. There are 151 pockets on each side of the dock, built to the standard spacing of 12 feet, the distance from the inner wall of the first pocket to the outer wall of the last pocket being 1,812 feet. From the main water level of Lake Superior to the base of the rails in the tracks on the top of the dock, the height is 75 feet and the width of the dock, exclusive of machinery platforms, is 62 feet 6 inches. The structure is, therefore, 1 foot higher and 10 feet 10 inches wider than the new Duluth & Iron Range dock, recently described in The Iron Trade Review. The height from the water level to the hinge of the spout

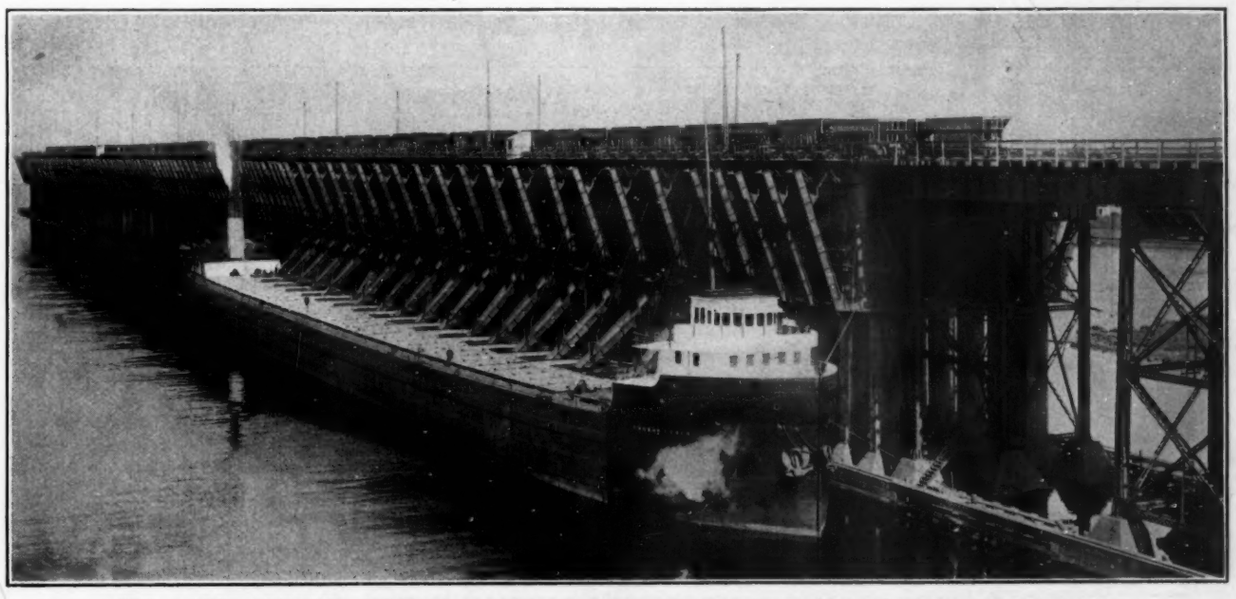


FIG. 1—THE STEAMER THOMAS LYNCH LOADING AT THE NEW ORE DOCK AT ALLOUEZ, WIS.

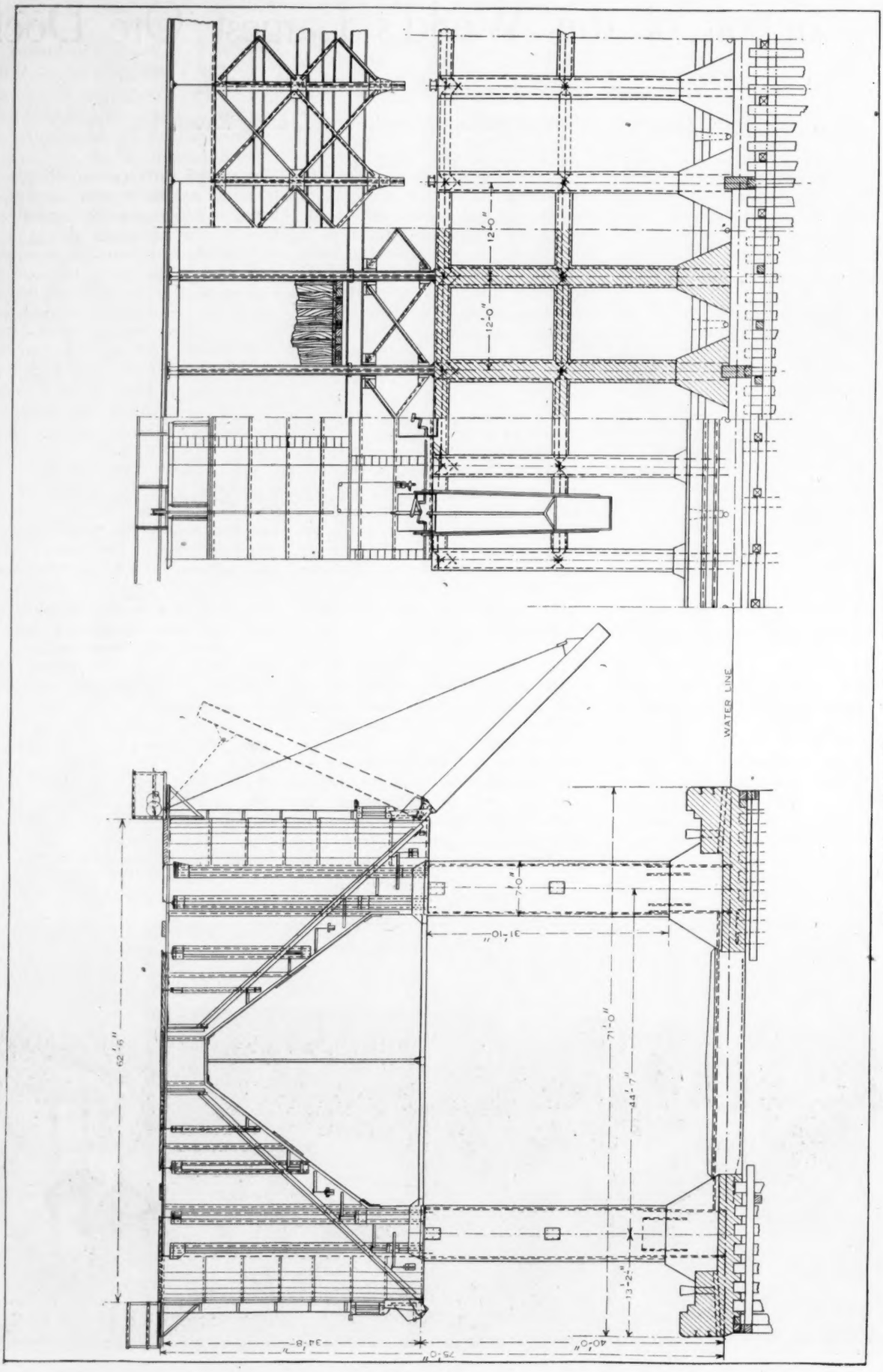


FIG. 2—ELEVATION AND TYPICAL SECTION OF THE DOCK

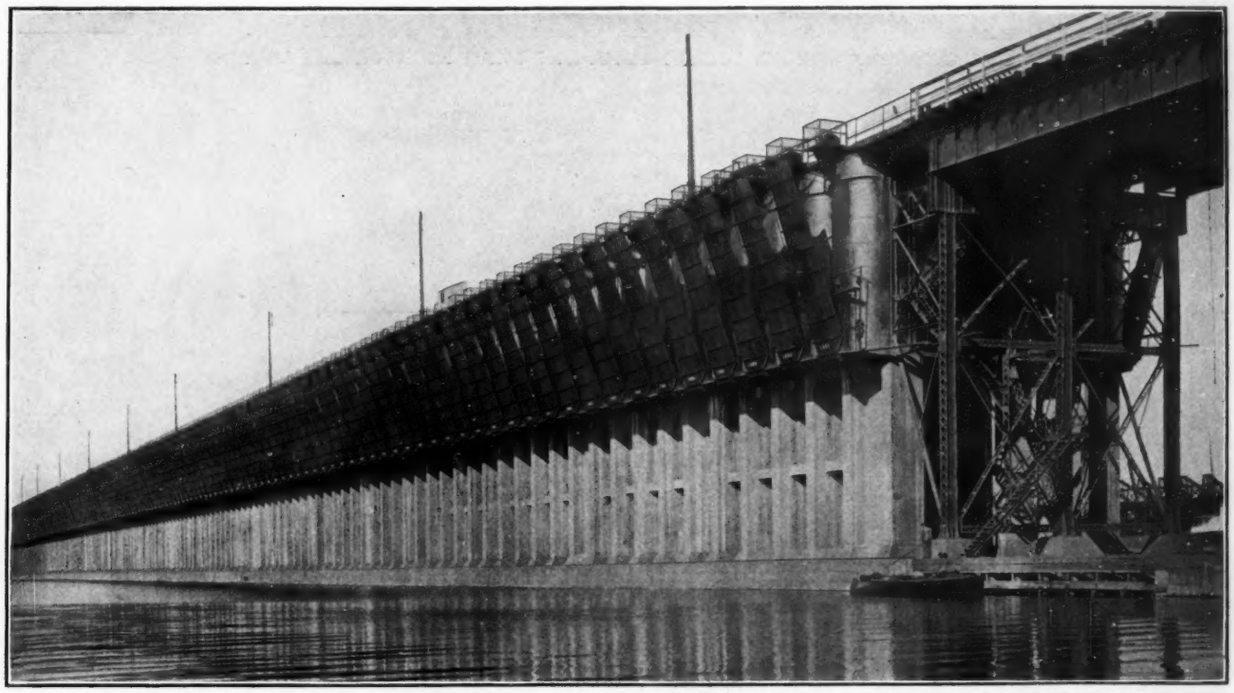


FIG. 3—GENERAL VIEW OF THE DOCK FROM THE SHORE

is 40 feet, the depth of the pockets, therefore, being 35 feet. Six of the largest vessels on the lakes may be loaded at this dock at one time.

The mechanism for hoisting the spouts is similar to that installed on the Duluth & Iron Range No. 1 dock. The doors are of the usual type, but radical changes have been made in the design of the spouts. They are rectangular in section and tapered. The general nature of the foundations is indicated in Fig. 2. Under each side of the dock rows of piling are driven spaced approximately 2 feet 5 inches between centers, there being seven piles driven 2½ feet apart in each row. The two groups of piling are enclosed in two parallel timber cribs, the outside walls of which are sand tight. At intervals of approximately 28 feet, 9 inches the two parallel cribs are tied together by four 10 x 12-inch timbers, two at the bottom and two at the top of the cribs. The cribs are filled with sand and capped on top by a concrete slab, which is 3 feet thick under the supporting columns or piers. The outer edge of the concrete slab is built-up in the form of a coping, as indicated in Fig. 2, and the face of the wall is protected from contact with the ore boats by two 10-inch, 30-pound I-beams set in the cement, as shown in Fig. 2. No wooden fenders are used.

The posts supporting the bins are solid concrete, 7 x 2 feet 9 inches in

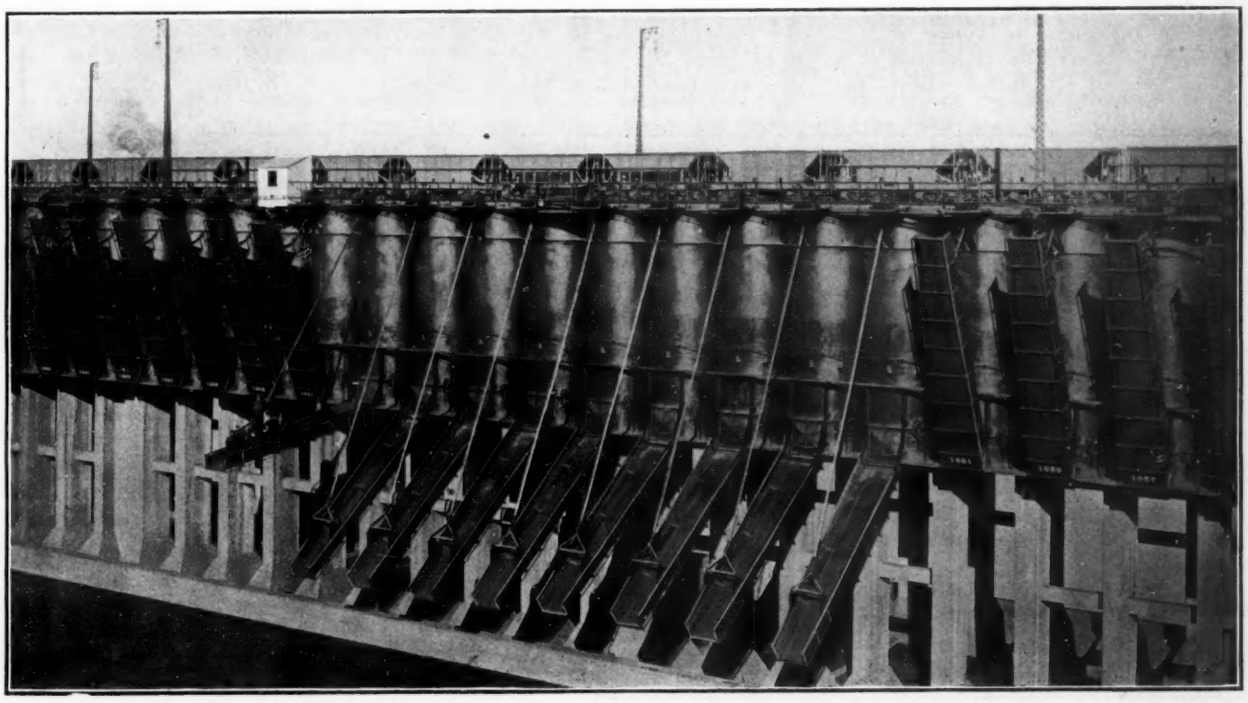


FIG. 4—FACE OF THE DOCK, SHOWING THE STEEL POCKET FRONTS AND IMPROVED SPOUTS

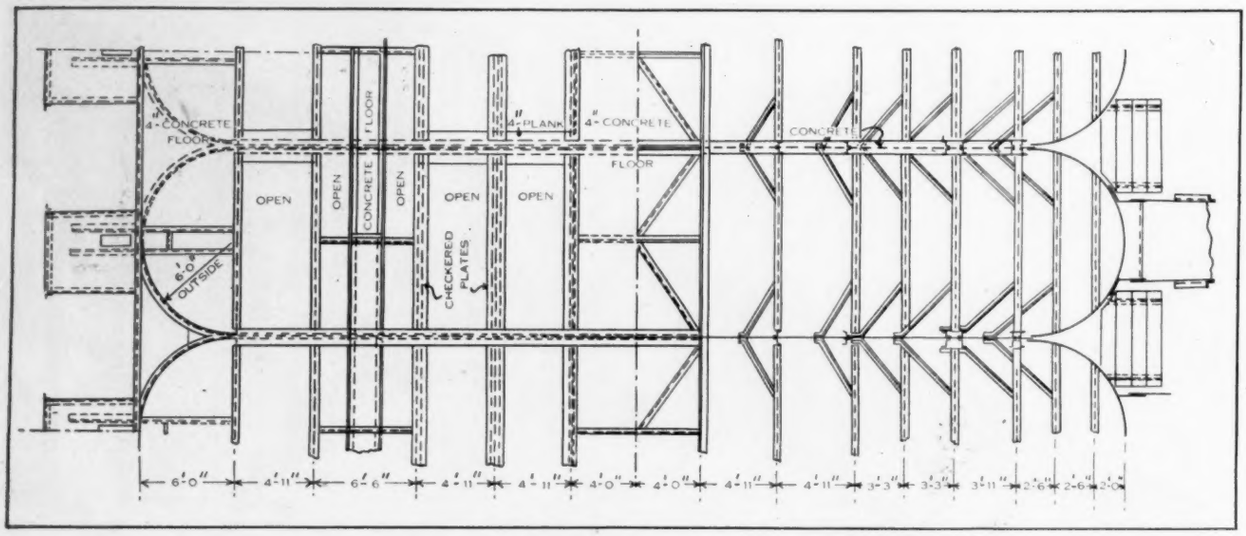


FIG. 5—FRAMING OF THE BINS AND TRACK STRINGERS

cross-section. They are 31 feet 10 inches in height, exclusive of the pedestals, which are 8 feet 6 inches in height above the water line. The pedestals and slab surmounting the piling are constructed of 1:2:5 concrete and the posts are 1:2:4 concrete. The only reinforcing in the posts consists of ⅞ inch vertical rods embedded 4 inches from the surface at the corners. These are intended merely to protect the corners from injury and not to lend stiffness to the column. These concrete supporting columns are in reality piers. They are tied together longitudinally by two sets of reinforced concrete beams, each beam being 2 feet deep and 1½ feet thick. The upper row of beams connects the tops of the piers, as shown in Fig. 2, and the lower row is located at a point 14 feet 11 inches above the tops of the pedestals. The substructure is further stiffened by 16 tower bays, one at each end and one in the middle, the adjacent piers in the towers being connected by a 12-inch concrete wall. The expansion and contraction of the structure is provided for by the insertion of 15 expansion bays equidistantly spaced.

Bin Partitions.

The bin walls or partitions which connect the two piers in each bent are composed of a series of columns built of plates and Z-bars. There is a column under each track stringer. These columns are connected by ⅜ inch plates, as shown in Fig. 2, so that the bin wall becomes a beam extending across the dock from pier to pier and supporting all the loads imposed upon the superstructure. To give a smooth surface to the inside of the pockets, the steelwork in the walls is covered by concrete which is flush with the flanges of the Z-bar columns. A series of seven I-beam purlins connects the bin walls and supports the floors of the pockets. The floors consist of a 6-inch creosoted fir filling layer with a 4-inch hard maple surface laid on the fir. This construction is quite different from previous designs. Heretofore ore dock framing has been merely a modification of standard trestle construction. That is, the structure is supported on steel columns suitably tied together by diagonal bracing, these columns being surmounted by stringers or girders which carry the load between the bents, the bin floors being carried by a series of A-frames. The walls between the bins are merely partitions. In this dock the superstructure is supported on a series

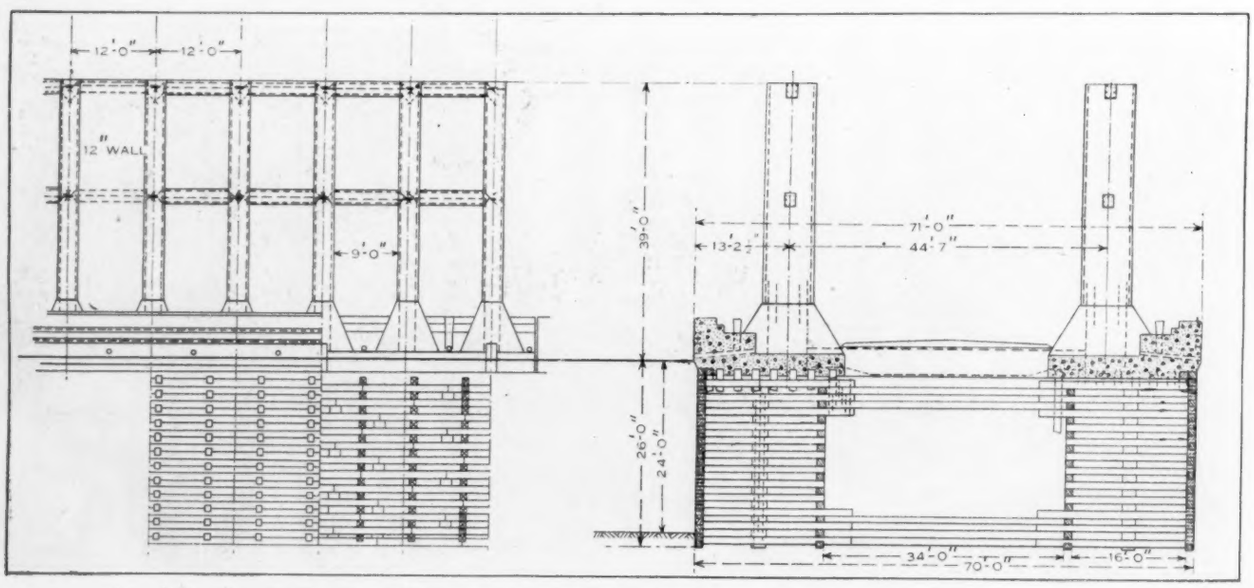


FIG. 6—DETAILS OF FOUNDATIONS, CRIBS AND SUPPORTING PIERS

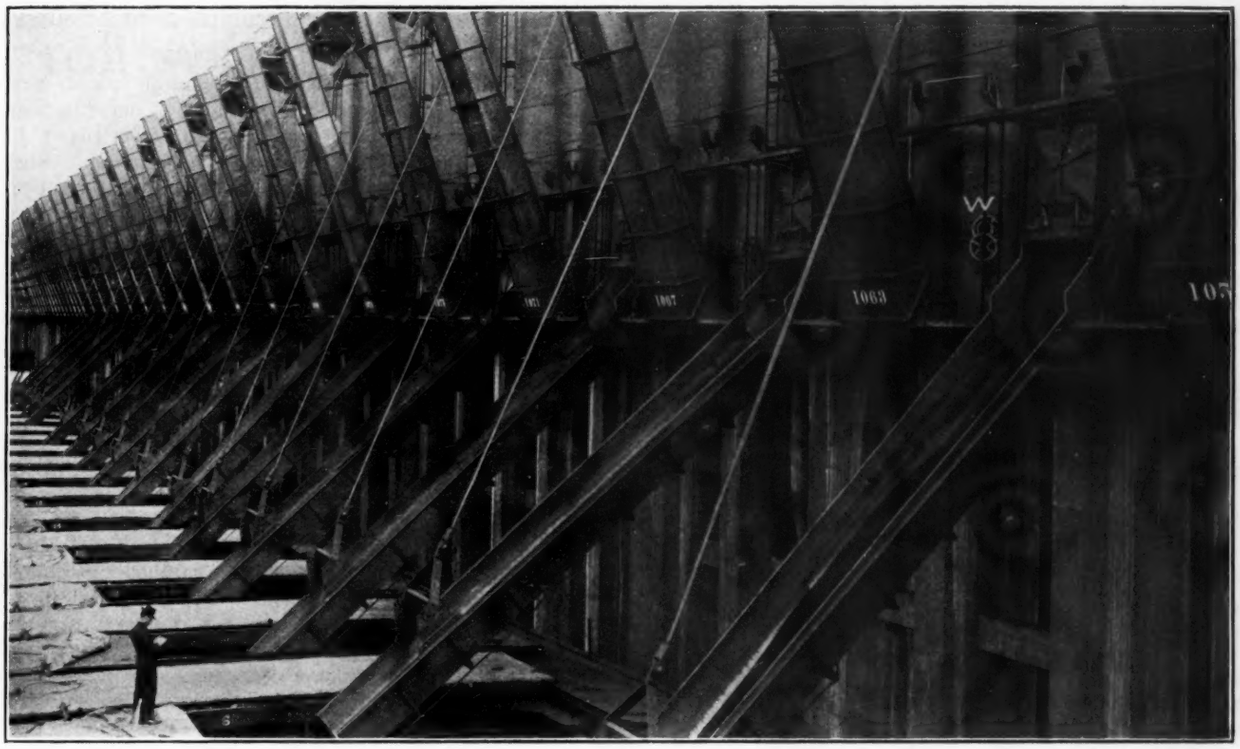


FIG. 7—POSITION OF SPOUTS AND DOORS WHEN LOADING A BOAT

of concrete piers properly tied together by rows of concrete struts, the ore bins, tracks, etc., being carried by the partitions between the bins, which in this case act as large transverse beams.

Ends of Bins.

The semi-circular ends of the bins are built of steel plate varying in thickness from ¼ inch at the top to ⅜ inch at the bottom, riveted together in courses exactly like the shell of a horizontal, tubular boiler. The semi-circular form, of course, is self-supporting and no posts or brading are necessary to resist the outward thrust of the ore in the bins. Aside from the simplicity and economy of this construction, its advantages in breaking-up the arching of the ore in the pockets have been explained. The pockets empty practically clean without poking, there being not more than four or five cubic feet of ore remaining after the pocket has been emptied.

In order to more equally distribute the ore in the pockets and avoid trimming, there are three tracks over each set of pockets, as shown in Figs. 2 and 8, but as indicated in Fig. 8, the four inside tracks are built in two pairs with three rails in each pair. It is, therefore, possible to shunt cars only over four of the six tracks on the top of the dock at one time. Each pocket is designed to hold seven 46-ton carloads of ore, although in actual operation only six carloads are usually dumped in one pocket.

Ore Chutes.

The ore chutes and doors are shown in detail in Fig. 7. The chutes have a free opening 5 feet 6 inches wide and 2 feet 8 inches high. The doors are of the ordinary sliding type and are not counter-balanced. They are hoisted by means of a hand

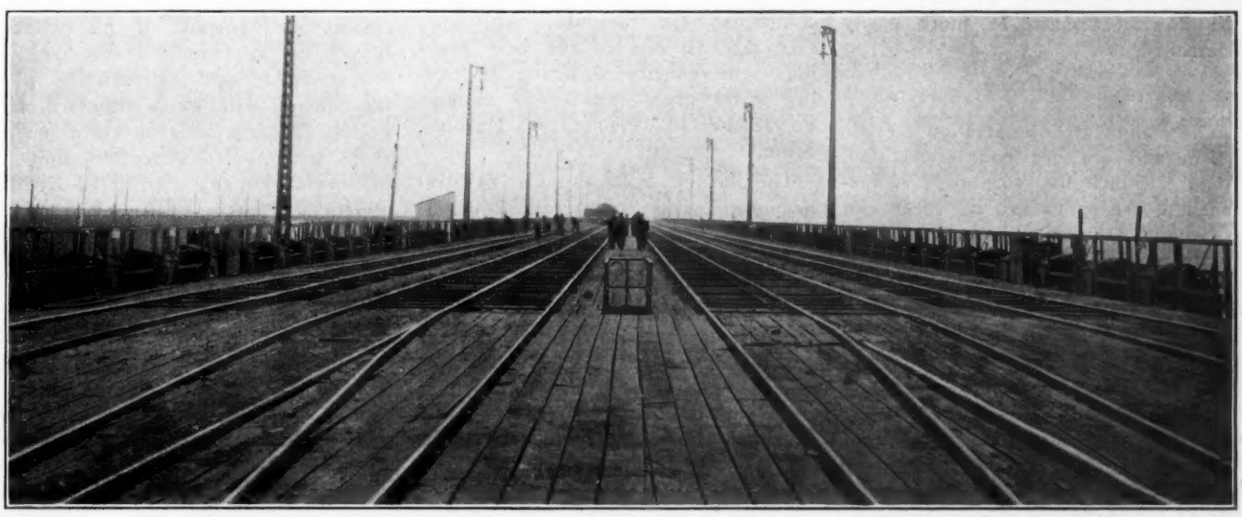


FIG. 8—TOP OF THE DOCK, SHOWING THE FOUR INSIDE TRACKS WITH ONLY SIX RAILS

winch, W, Fig. 6, the hoisting rope being connected to the latch mechanism. The winch is geared so that a pressure of 35 pounds on the handle is sufficient to hoist the door. As soon as the door is unlatched the pressure of the ore forces it out a short distance and the stream commences to flow. By means of the winch the door can then be hoisted as much as desired. If it is necessary to hoist the door to its fullest opening and leave it in that position, it is prevented from closing accidentally by a safety bolt which fits through a 1¼ x 3-inch hole milled in the cheek plate. The plate forming the door is dished slightly to give it stiffness. The door cannot be closed while the ore is flowing. Fig. 7 also shows the ladders which give access to the door operating platforms. The main ladders are spaced 24 feet apart and reach down to an auxiliary platform over the doors which extends the whole length of the dock. From this platform the individual operating platforms are reached by short ladders.

Spout Construction

The construction of the spouts is shown clearly in Fig. 7. The previous general practice has been to make the spouts semi-circular in cross-section with parallel sides, but in this case they are made rectangular in cross-section with fillets of 10-inch radius in the corners. The sides and bottom are stayed by angle bars and channels. This construction is very stiff and prevents warping and buckling. At the lower end the spout is 4 feet wide, while at the upper end it is 5½ feet. This taper restricts the velocity of the ore somewhat at the lower end of the spout, due to friction, and thus reduces the impact in the hold of the vessel, and permits the flowing ore to be more easily controlled.

The Hoists

The spouts are operated by electric hoists and are not counterweighted. A ⅜ x 5-inch flat wire rope is fastened to the spout and its upper end is wound around a drum connected to an electric hoist situated on the machinery platform at the top of the dock. The hoists are operated in groups from a line shaft, the drums and the shaft being connected by friction clutches controlled by operating levers. Twenty-five-horsepower alternating current, 3-phase, 60-cycle, 440-volt motors are used, there being one motor for every 10 spouts. The motor has sufficient power to handle several spouts at once. The line shaft is so arranged that the sections may be coupled together and in case the motor operating any particular group of spouts is damaged an adjacent motor may be used. The hoisting drum is connected to the line-shaft through two sets of spur reducing gears, so that the drum, when hoisting a spout, rotates in the same direction as the line-shaft. In order that the spouts may be lowered under the control of the motor without reversing the line-shaft, an auxiliary chain and sprocket gear is inserted between the line-shaft and the jack shaft. When the spout is to be lowered the main clutch which operates through the spur gears, is thrown out and the auxiliary clutch connected to the sprockets is thrown in, so that the drum then revolves in the opposite direction from the motion of the line-shaft, and the spout is lowered slowly and steadily. It is not possible with this mechanism to drop the spout accidentally. The details of this device are similar to that employed on the new No. 1 dock of the Duluth & Iron Range Railroad, described in THE IRON TRADE REVIEW, Dec. 28, 1911.

The dock is lighted by flaming arc lamps, suspended on structural steel posts 35 feet in height, as shown in Fig. 8. The posts are spaced 192 feet apart. On the old docks, using ordinary arcs, the lamps were spaced from 108 to 120 feet apart.

Marvelous Loading Record

This dock has already achieved some enviable operating records. Soon after its completion 9,500 tons of ore were loaded into a single vessel in 25 minutes and a little later eight vessels, with an aggregate of 62,000 tons, were loaded in six hours or at the rate of 10,334 tons an hour. This compares very favorably with former records, one of the best previous achievements consisting of loading 10,111 gross tons in 39 minutes on October 10, 1909, at Two Harbors, Minn.

The Barnett & Record Co., of Minneapolis, were contractors for the foundations and concrete work and Whitney Brothers for the dredging. The steel work was fabricated by the American Bridge Co. and erected by the Pittsburgh Construction Co. The Minneapolis Steel & Machinery Co., Minneapolis, built the spouts. The dock was designed by Max Toltz, of St. Paul, consulting engineer. It was erected under his supervision with the co-operation and advice of A. H. Hogeland, chief engineer of the Great Northern railway.

Newark Technical School Foundry Course

The Newark technical school, Newark, N. J., has added a course in foundry practice, which is intended for those engaged in foundry work, whether as journeymen or apprentices. The instruction is largely in the form of lectures, no practical work, such as the making of molds or cores, being provided for, as it is assumed that all applicants who are already engaged in foundry work are desirous of improving their knowledge of the science and theory of foundry practice. For admission, the applicant must pass an examination in elementary arithmetic. The course covers two years and during the first year the classification and grading of pig iron is taught and includes a discussion of the influence of various constituents on its qualities and its selection for different purposes. Lectures are also given on the crystallization and shrinkage of cast iron, and the calculation of weights of different kinds of castings and metals. Cupola practice is also taught.

During the second year lectures on the following subjects are included in the course: Molding sand, varieties and uses; green and dry sand molding; liquid pressure in molds, blow-holes, segregation in castings, foundry facings, patternmaking, chill castings; selection of iron and design of chill, malleable castings, testing of cast iron and alloys, brass foundry work and lectures on the metallurgy of iron. Lectures on foundry practice are delivered two nights per week and two nights are devoted to drawing.

Greetings from the management of the American Blower Co., Detroit, to its employes are contained in a handsomely-illustrated booklet issued by this company during the holiday season. The purpose of this publication is to acquaint the employes of this company and their families with the concern with which they are connected. As has been the custom for some years, a considerable sum of money is annually distributed by the American Blower Co., the allotment providing for $1 for each year of employment for all of the company's employes. The booklet contains illustrations of the various works operated by this company, as well as photographs of the officers, department heads and sales representatives.

Worley & Black, engineers, Kansas City, Mo., are preparing plans for the installation of an electric lighting plant at Norfolk, Neb. Estimated cost, $75,000.

Profit-Sharing as an Incentive to Industry[1]

The Distribution of Profits Among Employes and Customers —The Establishment and Growth of the Village of Leclaire

By N O Nelson

Profit-sharing aims to make a fairer distribution of the profits of business than is done by contract wages, and to make work more efficient by enlisting the interest of all the employes in the outcome. Not only economists and publicists, but employers realize how unequal is the distribution, and how far short of maximum efficiency hired help is. Ability commands its price, it should also recognize its duties. The captains of industry hold a commanding position in this twentieth century; they must justify their high prerogative. They are a shining mark for the muckraker and the superficial censor; let them disarm just criticism by doing well their part as factors in the economic and social structure. The time has gone by when men of affairs might say "What is mine is my own". They are a social product, they accept a social duty.

The Human Element

Employers hire capital and hire men, they pay interest and pay wages, thus ends the contract idea. But there is a human element, submerged maybe by trade and profit, but alive in every upright man. Profit-sharing introduces the human element, reinforced by self-interest and mutuality. The orthodox profit-sharing plan takes business as it is, up to the date of closing the books. When the profit is ascertained, wages, expenses, depreciation and interest on capital having been paid, a division is made between wages and capital. The plan of division must be stated in advance, nothing being left to the employer's caprice; all regular employes must share in proportion to their wages; the dividend may be paid in cash, but preferably in stock so that the employes shall automatically become partners and property owners. The process is simple, but multitudes have wrecked well-meant attempts by complicated terms and restrictions. Given a profit-making business, it need make no change whatever in its organization or operation. At the year's end, instead of the stockholders taking all the profit, employes get part of it.

There are two standard plans of division: An equal division on *capital* and wages, or an equal dividend on *interest* and wages. The former is well to start with, an initial step in breaking away from pure capitalism; the latter is the fair thing between men, a larger adaptation of business to social ends.

Essentials of Profit-Sharing

When ability of management is paid its worth, and labor its wages and capital its interest, the residue can reasonably be divided between them, with safety to capital and justice to labor. Interest on capital is its wages, without which it will not venture into activity. On good credit it can be borrowed at a rate; when this is paid the claim of the capital in a business is acquitted. Let its wages then stand at par with wages of employes and managing ability.

The essentials of profit-sharing are that the terms be stated in advance; that it apply equally to all regular employes; that it be free from restrictive conditions; that it be sufficiently liberal to make a tangible dividend on wages and preferably, that the dividend be paid in stock.

The first systematic profit-sharing was inaugurated in 1842 by Jean Leclaire, a house painter and decorator in Paris. In due time Leclaire instituted a mutual aid society of selected workmen, which became owner of one-half the stock of the company and which elects, from time to time, two managing partners who have a special allowance. There are now in the Leclaire Co. about 1,600 workmen, divided into several classes with varying allotments in the profits. It has survived two revolutions, the commune and a succession of managements.

The great stove and ironware works of Godin & Co., at Guise, France, and Liege, Belgium, employing 2,200 men, was converted to profit-sharing in the 70's. Mons. Godin died in 1888, having already set up an elaborate profit-sharing, housing and social plan, with provision for the employes acquiring the entire property by paying off his capital out of the profits. The employes are divided into four classes, the upper and governing class being filled by the election from the lower grades. It is very successfully managed by an elected committee and a general director. Godin's experience as a radical political and social reformer led him to draw up an elaborate constitution essentially aristocratic, which perpetuates control in a small self-perpetuating class.

About 25 years ago a serious strike occurred in the South Metropolitan Gas Works, of London. As a part of the settlement of the strike a plan was adopted whereby all the employes were to receive a dividend based on the reduced labor cost of producing gas. By the company's charter it could increase dividends only as it reduced the price to consumers. It thus became a triangular profit-sharing between the gas consumers, the stockholders and the employes. Under this arrangement the 5,000 employes now own over $2,000,000 of stock, have three directors on the board and the general manager, George Livesay, now dead, was knighted for his social service. A large portion of the important gas companies of Great Britain have adopted a practically similar plan.

Profit-Sharing in the United States

Systematic profit-sharing has taken little root in the United States, but there are a large number of concerns which in casual ways recognize labor's share in their prosperity. It is common with banks to pay a bonus of two or four weeks' salary to employes at the end of the year. Some manufacturing companies pay a cash bonus as high as 10 per cent in prosperous years. The United States Steel Corporation, the Illinois Central railroad and others, sell stock to employes on easy installments. The International Harvester Co. has an elaborate though limited pension and bonus plan. None of these is true profit-sharing, but they recognize a social obligation from employers to the employed.

My own company in St. Louis adopted profit-sharing in 1886. At

[1]Presented before the Cleveland Chamber of Commerce, Jan. 9, 1912.

first we took interest for the capital and made an equal dividend of the remainder on wages and capital, payable in cash with the option of stock. The first year's dividend on wages was 5 per cent, then 10 per cent and 8 per cent alternately, up to the panic of 1893, when dividends on both capital and wages were suspended for several years. Later a 4 per cent annual dividend on wages was made to cover the suspended years. Since 1888, the dividends have been paid only in stock.

At the start we set aside 2½ per cent of the profits for a provident fund, and 2½ per cent for an educational fund. We soon changed this into simply caring for the sick and disabled, and the families of deceased workmen, deeming it wiser to preserve the human element than to depend on fixed rules. None of our employes ever become charges on the public or friends.

Sharing Profits With Customers

Beginning with 1905, we took the customers into the arrangement, basing our dividends on the gross profits of each regular customer's purchases, and at one and one-half times the rate allowed on wages. At the same time the stockholders decided to waive any share in the profits, taking interest only for the capital. In these seven years, the dividends have averaged 20 per cent on wages and 30 per cent on customers' gross profits.

The employes and customers now own more than one-half the capital and comprise the board of directors and officers, except myself as president. No interference or complaint of the management has ever occurred. In the 26 years, we have had three strikes by some fractional union, but always commanded or promoted by outside union influence, never from internal dissatisfaction. Profit-sharing is no guarantee against strikes, for there is still room for difference of opinion, but it goes without saying that it tends to humanize and harmonize.

In the panic of 1893, when money was scarce, the entire force unanimously accepted a cut of 25 per cent in wages, which continued without question for three months. Last month one of our largest departments was beset with so low a market and slack demand that it could not run full and make work for all, at prices to come out even. I explained the situation and suggested that a reduction of 20 per cent in wages, until conditions should improve, would help. The proposal was accepted, with only three dissenting votes, and these assented later.

The Village of Leclaire

In 1890, we acquired a tract of 125 acres of land, 18 miles from St. Louis, in Illinois, and started the village of Leclaire for our factories, and homes for employes and others who might choose to settle in it. The plan was to make modern factories to work in, facilities for education and recreation, attractive landscape and homes for any who wanted them. We planned a town with the facilities of a city, and the room and freedom of the open country.

We laid out the residential portion park fashion, made cinder roads, board sidewalks, since replaced by concrete, built a bowling alley and billiard rooms, a hall for dancing, music, lectures and meetings, a ball ground and a lake for boating, skating and fishing. We set out trees and built a greenhouse for supplying flowers to all who would set them out. Employes were not dependent on the company, for Leclaire adjoins the large county seat of Edwardsville, where employes could find houses to rent or buy. We built Leclaire for any who wanted their own homes, on monthly or weekly payments, at about the same as city rents. Others than employes built for themselves. The lots are from 50 to 100 feet front, and 125 to 200 feet deep. We installed a good water supply, electric light and sewer system. We have always had a kindergarten, music, bands and ball clubs. The population is now about 700. We have never had or needed a policeman or mayor, or boss or rules. The public work is done by employes of the company, and there are no municipal taxes. The expense is charged to profit and loss account.

By the average of cities, Leclaire should have had about 250 arrests. It has had three, none of which was a proper Leclaire resident. We have had no divorces, and a death rate of 3½ in 1,000, against the usual 14 to 25 in 1,000.

Exceptional Social Results

The exceptional social results are due to regular employment, a sufficient income, owned and beautified homes, and ample social facilities. In the 26 years of profit-sharing and 21 years of Leclaire, we have distributed the ownership of the main portion of the profit-created capital among those who made it. We have used a portion of the capital in building a well-equipped town and homes for employes.

The capital has not been dissipated, but conserved. We have paid the market rate of interest on the capital, the excess being issued as profit-sharing stock to those whose work and trade directly affect the company's profits and their own dividends. The amount invested in home-building bears interest and is continuously repaid.

Without any rules or requirements, Leclaire homes are so beautified and well kept, the people so orderly, intelligent and agreeable, the children so numerous and rosy, that many families who are free to choose their place of residence, including my own and my daughter's, have settled in Leclaire.

Leclaire consists of only common elements, that which all people need and most people like. Common sense and good will are its foundation, human inclination toward the orderly, the appropriate, the beautiful and good, is the efficient architect of its social structure.

Social Decay

In meeting the demand of the people for manufactured goods, employers have tempted the independent self-employing farmers into becoming wage earners, dependent on them for work. The process of social decay in cities is one of the familiar facts of history from which no modern industrial nation is immune. In England, where the factory system is the oldest, and wealth the greatest, the proportion of pauperism is the largest, the men fit for soldiers the fewest. In our own cities, the heroic ameliorating measures of philanthropy cannot keep pace with the rising tide of dependence. Captains of industry are not to blame for making the goods that people want, or for hiring the people who seek to work, but they may well take it to heart that they are active agents in the tragic process and adapt their policies to social needs as well as economic utility.

By taking into a limited partnership the men who work in their organization by making them owners of property, getting them homes of their own with plenty of room and healthy surroundings, they can do a part toward saving our civilization from the calamities of our historic predecessors.

The Union Oil Co., Los Angeles, Cal., plans for the erection of an oil refining plant at Santa Paula, Cal., to cost about $25,000.

A Core Testing Machine

For the purpose of comparing the strength of various core binders and core mixtures, a core testing machine is now manufactured which is shown in the accompanying illustrations. In the development of a machine for this purpose a series of experiments on core mixtures were undertaken about five years ago by Geo. H. Wadsworth, of the Wadsworth Core Machine & Equipment Co., Akron, O. A number of different methods of testing cores were tried, but the choice lay between the tension and transverse tests. The transverse test on a one-inch square core, 15 inches long, gave fair results on very strong cores made from oil, sand mixtures used for radiators, gas stove burners, etc., but it was found difficult to turn out these large cores in quantities without rods and at the same time to be certain that they would not contain mechanical defects which influenced the strength. It was also found that the transverse test on bars of this length was not sufficiently delicate for a comparison between mixtures of approximately the same strength.

For making the tension tests a cement testing machine was first employed and this was found to be excellent for very strong cores, but was not sufficiently delicate for the weaker mixtures used in gray iron, brass and malleable foundries. Another machine was tried, but as its capacity was limited to 50 pounds per square inch it was not entirely satisfactory, and it was concluded to develop a core-testing machine on entirely different principles. The core to be tested is made in the form of a concrete briquette, having an area of one square inch in the center. The core is placed between the jaws in their closed position, as shown at *B*, Fig. 1. In this view, however, the core has not been placed in position. The galvanized pail, *D*, is suspended from the lower jaw in such a way that it is supported by the core. The hopper, *E*, is filled with shot and by raising the pin, *A*, to the top of the slot in the lower jaw, a small gate at the bottom of the shop hopper is opened and the shot is permitted to flow into the pail. When the weight of the shot in the pail causes the test core to break, the pins separate, as shown at *C*, Fig. 2.

When the lower jaw descends it carries with it the pin, *A*, Fig. 1, thereby automatically closing the shot valve in the hopper, *E*. This jaw, however, is so arranged that the pail and jaw remain supported on the pin, *A*, without coming in contact with the base of the machine. The pail is then removed from the hook and is hung on the spring balance, as shown in Fig. 3. To obtain the full weight required to break the core, the weight of the lower jaw must be added to the weight of the pail and shot. This gives a direct reading of the weight necessary to break the core. This operation is very simple and two cores per minute can be tested readily.

When it is desired to carry out a series of tests with a new lot of sand, oil or binder, two batches of cores are made with the same sand, one being mixed with the old binder and the other with the new, both in the same ratio. These cores are baked on the same plate in the core oven in alternate rows and after cooling, are broken. The baking temperature will have a considerable effect on the strength of the cores, but both samples will be affected similarly so that with this method of procedure an exact comparison of the strength of the two binders can be made.

It has been found that the variations in the clay content of the sand, the amount of dirt it contains and the size of the sand grains themselves may have a marked effect on the strength of the cores and, therefore, any new lot of sand should be tested. Samples of the new and old sand should be used for the core mixtures, using the same binder for both. The core should be baked on the same plate in the manner as previously described and the strength of the new sand be obtained readily by testing the cores. It is advisable to make test cores from the regular mixtures each day, which are baked with the cores used in the foundry, and if the temperature of the ovens is too high or too low these test cores will not develop the proper strength. In this way the core mixtures and the core oven temperatures can be checked day by day. The strength of the cores can be controlled easily within very narrow limits. By the installation of one of these testing machines the core room practice can be checked daily and at very low cost. This machine was built by the Wadsworth Core Machine & Equipment Co., Akron, O.

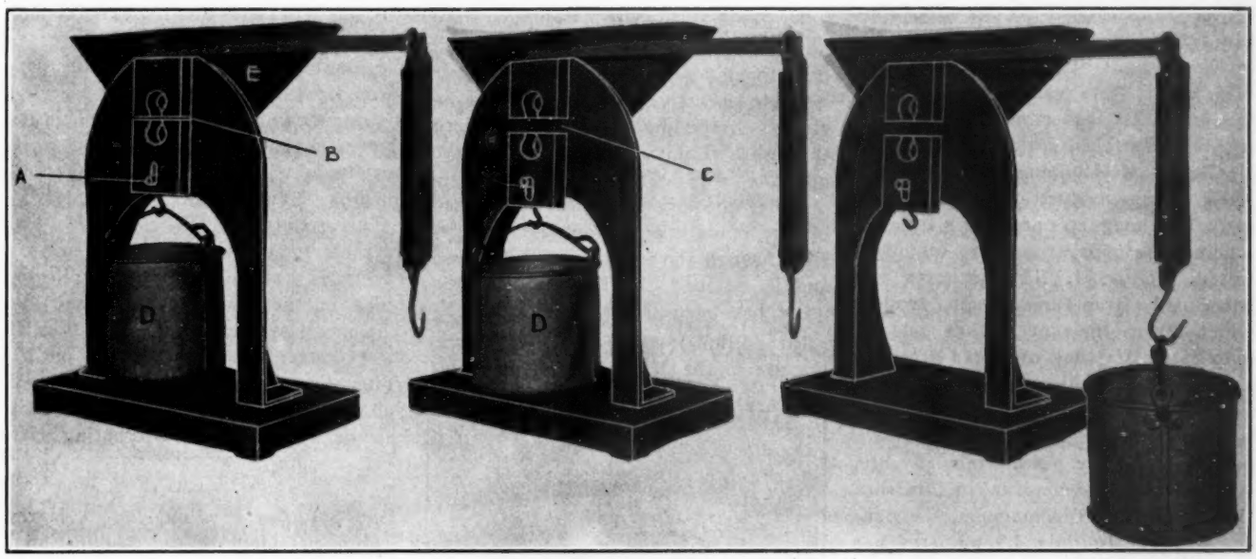


FIG. 1—JAWS IN CLOSED POSITION BEFORE BREAKING TEST CORE

FIG. 2—JAWS SEPARATED AFTER TEST CORE HAS BEEN BROKEN

FIG. 3—WEIGHING PAIL AND SHOT TO ASCERTAIN THE STRENGTH OF THE CORE

FIG. 1—LIFTING MAGNETS UNLOADING PIPE

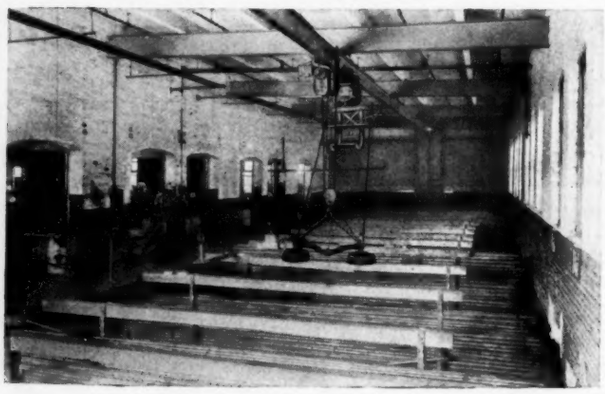


FIG. 2—LIFTING MAGNETS IN PIPE STORAGE

Lifting Magnets for Handling Pipe

An interesting installation of lifting magnets for handling steel pipe has been made recently in the plant of the Rockwood Sprinkler Co., Chicago. The magnets are of the 18-inch type built by the Cutler-Hammer Mfg. Co., Milwaukee. This plant manufactures assembled parts for sprinkler systems, which consist principally of steel piping ½ to 10-inch sizes, fittings, valves, sprinkler heads, etc. The magnets are used for unloading the pipe from cars, as illustrated in Fig. 1. The magnets are suspended from an I-beam trolley, which serves the pipe storage, and an extension of the overhead runway commands the unloading track in the yard. A view of the pipe storage is shown in Fig. 2. The cars are unloaded and the pipe is piled by one man. A motor generator set furnishes the current for the magnets, the consumption being only 1.9 amperes per magnet.

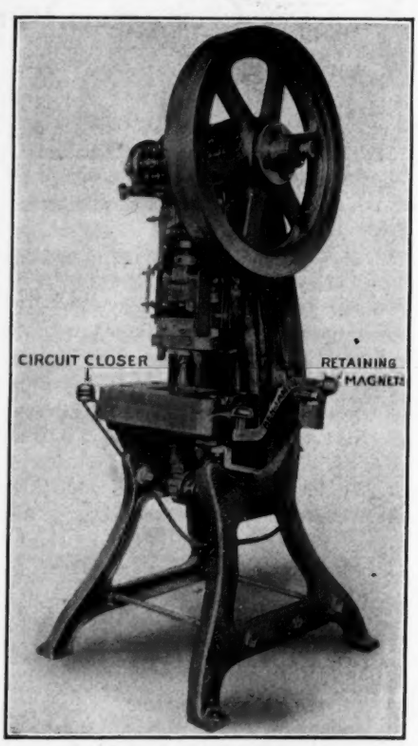
Safety Device for Stamping Presses

Most punch and stamping press accidents result from the operator unconsciously placing his foot on the treadle when his fingers are between the dies, or failing to remove the pressure on the treadle at the proper moment, causing the press to repeat. To avoid these dangers, the Benjamin Electric Mfg. Co., Chicago, has perfected a punch press control which eliminates the foot treadle and substitutes hand levers, it being necessary to use both hands to operate the machine. This protects the operator by necessitating the removal of both hands from the point of danger when the press is in action. The attachment is illustrated herewith.

It is impossible for the press to repeat unless both hands are kept on the levers until the repeat operation is begun, in which event the operator would not have time to get his hands back into danger before the operation is completed.

The device consists of an operating lever normally inoperative, although free to move downward. This lever is made operative by the action of an electro retaining magnet energized through a circuit closer located on the opposite side of the press. Consequently, the press cannot be tripped by the operating lever unless the circuit through the magnet is first closed and is retained closed until after the press has been tripped.

In addition to the protective feature, the use of the device results in an increased output of work where it is necessary to bring the hand into a position of danger for handling individual pieces. The operator knows the press cannot trip until both hands are removed and the increased confidence thus created materially increases the number of operations actually performed, with a corresponding increase in the amount of work done. This increase in production on forming work has amounted in certain cases to as much as 30 per cent.



PUNCH PRESS EQUIPPED WITH BENJAMIN SAFETY DEVICE

This safety device can easily be adapted to all the standard presses and it is not necessary to drill new holes in the frame of the machine. The magnets are wound for 110 volts direct current, but can be used on 220 volts direct current by the use of suitable resistance in series, or they can be equipped for alternating current circuits.

On Saturday evening, Jan. 6, Harry Scullin, president of the Scullin-Gallagher Iron & Steel Co., St. Louis, entertained 30 of the heads of departments at a dinner given in recognition of the loyal and efficient services rendered by all the employes during 1911, and especially for the showing made by this company during the month of December, in which a new record was made for low cost of production and maximum tonnage in plant No. 2. This company has recently contracted for a 45-ton pouring crane, which will be built by the Alliance Machine Co., Alliance, O., and a turbine air compressor will be installed by the Ingersoll-Rand Co., New York City.

J. S. Kuhn and W. A. Kuhn, 345 Fourth avenue, Pittsburgh, are reported to be preparing plans for the erection of dams on the Cheat river, Morgantown, W. Va. The cost is estimated at $1,000,000.

The Construction of Manufacturing Buildings

A Comprehensive Discussion of the Problems to be Considered in the Erection of Manufacturing Plants

By Oscar E. Perrigo

Manufacturing buildings must be carefully designed before they can be successfully erected, but to properly design these buildings we must have investigated thoroughly the uses to which the building is to be put, the ground upon which it is to be built and the material best adapted to its construction. But even with information as to the uses of the building and character of the ground at hand, we cannot always decide in a moment as to the material to be used, since the best material may not be available or can only be obtained at such a distance that the cost of transportation prohibits its use.

Manufacturing buildings are nearly always erected for utility rather than ornament, hence, the latter should be secondary to the practical question of best fitting them for the exact work to be carried on in them and the machine equipment which they are to contain. To accomplish this we must be guided by a number of distinct, well understood conditions, among which are the following:

First.—The buildings should be strong enough to carry the weight and strains of the machinery to be operated in them, as well as the materials used in manufacturing. This latter weight varies within a very wide range and is constantly being changed from one point to another, for which ample provision should be made.

Second.—The structure, while amply rigid for all purposes, must, to a certain extent, be elastic enough to remain uninjured under the strains and shocks from the running machinery within and the elements outside.

Third.—While there should be ample opportunity for ventilation, there should not be any unnecessary height, as this will add much to the expense of heating, and therefore materially increase the overhead burden.

Fourth.—There must be ample provision for light. The windows should be large, placed near together, and extend nearly to the ceiling. Present demands as to light require from two to four times the window area used 10 or 15 years ago.

Fifth.—The floors should be of sufficient strength and proper material to successfully support such loads as are liable to be put upon them, either permanently or temporarily, without undue deflection or vibration.

Sixth.—The roofs should be designed to bear the force of high winds and the weight of snow in winter, and to require as little maintenance expense as possible. Leaky roofs are expensive in themselves, while the damage to materials and machinery is frequently even more so.

Seventh.—There should be numerous exits provided for the use of employes in case of fire. These must be increased in number as the ratio of the number of employes to floor surface area increases.

The Different Kinds of Building Material.

It has been suggested that the best building materials are not always available, and it is also true that the most available material is not always the best. Many of the older manufacturing buildings were built of stone, quantities of which conveniently happened to be in the vicinity and therefore available. One of the notable buildings of this kind is the old stone shop in New Haven, Conn., in which Eli Whitney formulated and established the system of interchangeable manufacturing of machine parts, now used in the shops of every manufacturing country in the world.

Ordinarily, however, stone is too expensive to use for manufacturing buildings, now that both transportation and labor are so much more expensive than formerly. There are many kinds and grades of stone, each usually better adapted for some one particular purpose than for any other.

For many years brick was the favorite material for all manufacturing buildings and, when good materials are used and the work well done, makes an exceedingly substantial building.

Corrugated iron has been frequently used, as for freight houses, store houses, rolling mills, forge shops and similar buildings, with both steel and wooden frames, and if kept well painted is very satisfactory for these purposes.

Many of the smaller and cheaper manufacturing buildings are built with wooden frames covered with tongued and grooved planks 2 to 3 inches thick, forming what is known as the "slow burning" system of construction. Many such buildings are also constructed with brick walls and the slow-burning construction roofs. In this form they are erected of several floors for factory use and are found well adapted to the purpose.

There are various kinds and forms of stamped sheet iron plates, used to cover and protect the sides of ordinary wooden buildings, and which, when kept well painted, are a good protection to the wood and a considerable protection against light external fires.

Sheet steel shingles have for years been successfully used as roof coverings. They should be kept well painted and with such care they make a very good and economical roof.

Various forms of paper saturated with tar and similar substances are also used as coverings on wooden roofs. Many kinds are sold under the name of roofing felt. Some of them are exceedingly useful and desirable as well as durable.

The roofs of buildings with stone or brick walls were formerly built of wood and covered with slate. This was for many years considered about the only construction for first class factory buildings. Roofs for corrugated iron buildings were generally built of corrugated iron supported by a steel frame. For slow-burning construction the roof frame is of wood and covered with planks, like the sides of the all-wood, slow-burning construction.

More recently much attention has been given to concrete as a reliable material and it has amply demonstrated its usefulness when properly made and used. Its success depends very much upon the materials used in its composition, and the care and thoroughness with which it is made. The strength of concrete construction was for years an open question, hence, its use was quite limited, but the different methods of reinforcing with steel in

various forms and better knowledge of its requirements has practically eliminated these objections, and the entire building, walls, supporting columns, floors, flights of stairs, and even roofs, are now successfully built of this material.

There are two methods of building with concrete. The first is that of building up wooden forms or molds and filling the space between with concrete, frequently introducing quite large pieces of broken stone. This is the form best adapted for the construction of manufacturing buildings.

The other method is to provide cast iron molds of desirable forms and sizes, and with these to make blocks of any size from that of a common brick to that of a large building stone. These are then laid up in the same manner as bricks or cut stone, and for which they form a very practical substitute.

Here again, the quality and suitability of the ingredients of which the concrete is composed will determine its value as a building material. Concrete is ordinarily composed of cement, sand, broken stone or coarse gravel (usually termed "aggregates") and water. The aggregates, whether gravel or broken stone, must be clean and free from dirt.

The sand used must be "sharp," that is, the grains must show, under a magnifying glass, sharp corners rather than smooth sides and rounded corners. Coarse sand is better than fine and it must be absolutely free from dirt.

Even in a moderate quantity, dirt will rapidly deteriorate the strength of concrete, and any considerable quantity in any of the ingredients will render the resulting concrete absolutely worthless as a building material.

One other important condition is, that the concrete must be very thoroughly mixed, so that in all parts of the mass there shall be an equal distribution of cement, aggregates and water.

There have been important changes in the design and construction of manufacturing buildings during the last 15 or 20 years, and much improvement in the arrangement of the various buildings composing the plant. There is a marked tendency toward the erection of one-story buildings; particularly when heavy machine tools are necessary to handle the work.

Some industries, such as rolling mills, forge shops, iron foundries, etc., of necessity require all machinery to be located at the ground level, the buildings being only a protection from the weather.

A favorite form of machine shop has been that described as follows: "The machine shop is 100 by 375 feet, divided lengthwise into a central portion 40 feet wide and 52 feet high, with side wings or bays each 30 feet wide. The central portion is open and clear to the roof, and has a traveling crane of ample capacity serving its entire length. The side bays are 32 feet high and divided into a main floor and a gallery or second floor, which extends also across the front end, thus connecting the two side galleries and providing a platform by which the traveling crane may transfer material and product to and from the main floor. Above the roofs of the side portions is a monitor roof construction having a series of windows along the sides, thus giving ample light to the central floor."

With this form of construction the heavy machines are all located on the ground floor, the largest inside the rows of columns supporting the traveling crane so as to secure its use in handling heavy material to and from the machines. All the lighter machines are located on the gallery floors. By this construction all the advantages of both a one and a two-story shop are secured, with the added advantages of the high central portion served by a traveling crane and providing excellent facilities for an erecting floor. A plan of both floors of such a building is shown in Fig. 1, which gives the plan of the building and the arrangement of the various departments on both floors.

Where more floor space is needed for manufacturing departments, and where the area of the site is ample, as it should be whenever possible, an

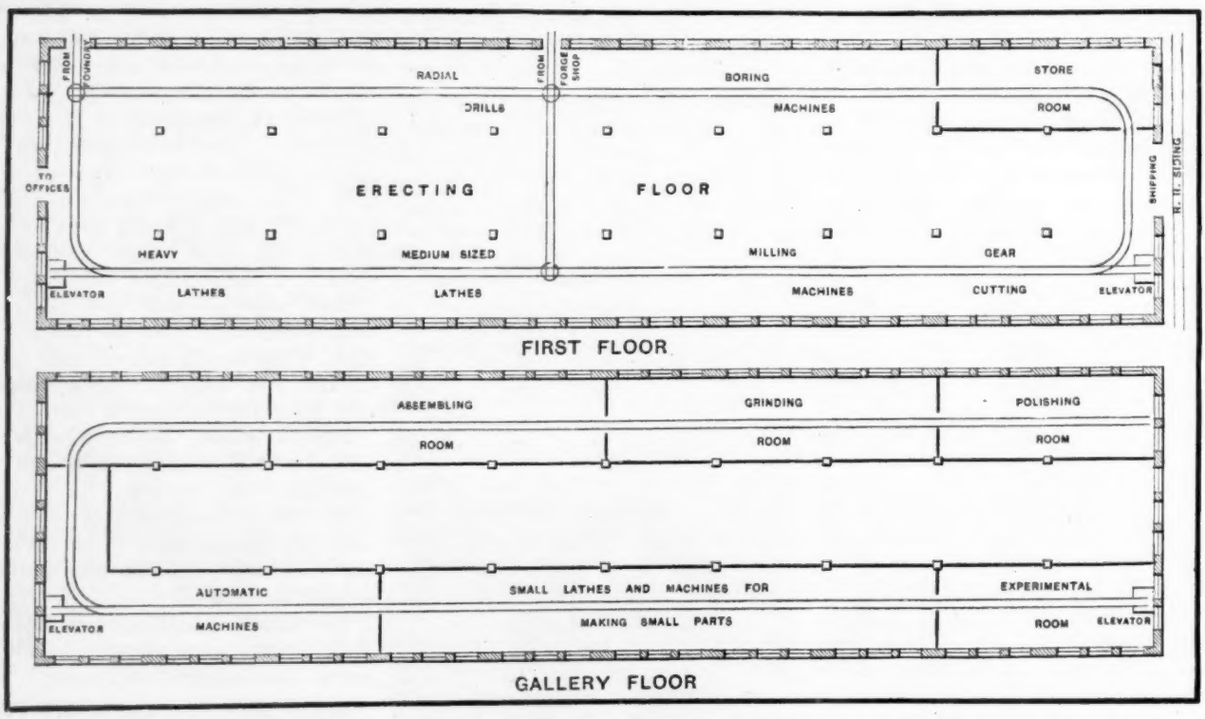


FIG. 1—PLAN VIEWS OF FIRST AND GALLERY FLOORS OF A WOODEN MACHINE SHOP, SHOWING THE ARRANGEMENT OF HEAVY AND LIGHT TOOLS

erecting building, high enough for a traveling crane, is built and at right angles to this are buildings containing the manufacturing departments, some of which contain traveling cranes arranged to run a few feet into the erecting building, where their loads are transferred to the large traveling crane. Fig. 2 shows the plan of the buildings of a plant arranged in this form. It also shows departmental arrangements.

In the design of practically all manufacturing buildings the structure is divided into bays or spaces of from 15 to 25 feet in direction of the length of the building, and crosswise of from 25 to 50 feet. Floor timbers, steel beams, or girders are used from one support to the next, crosswise of the building with their ends resting on the outer walls. This necessitates a very firm resting point, and for this reason, the walls are usually strengthened by the use of pilasters or buttresses, adding from 25 to 35 per cent to the thickness of the walls at these points. Between these pilasters the windows are placed, usually in groups of two, with a space of from 8 to 12 inches between them, this space being formed as a part of the window frame.

The factory type of building, that is, buildings of several floors, whether built of brick or reinforced concrete, is now designed to give a very large area of window space in comparison with the wall area.

The bays are usually about 20 feet wide and in each are two windows 6 feet wide and 12 inches apart. Occasionally the bays are 18 feet and each contains one window, sometimes as wide as 14 feet, the sash being made in sections and supported by the vertical bars of the window frame. Buildings constructed with a steel frame backed up with brick or concrete, none of which shows on the outside, have spaces of 18 to 24 inches only between the windows, making a wall of nearly all glass.

Foundations should extend down to firm and solid ground or we must artificially produce an equally substantial surface. This is usually done by driving piles. Solid ground or hard-pan may be found but a few feet under the surface at one point in a large foundation and at a lower level in others.

The bottom of the excavation must be level, the changes in height being "benched," or cut in step-like form. If piles are driven they should be cut off at such a level as to leave them always in wet ground. Stone work may be laid directly upon them, although frequently timbers are laid on in two courses, at right angles to each other and close together. These may be covered with planks and the stone work built upon them, but all wood must be low enough to be always wet and the atmosphere absolutely excluded, otherwise it will soon decay.

Foundations are nearly always built of stone. The first courses of stone at the bottom should be 50 per cent wider than the wall, forming a "footing," insuring rigidity and distributing the weight of the building over 50 per cent more area. Foundations should be laid in cement mortar, usually composed of Portland cement, 2 parts; slaked lime, 1 part; clean, sharp sand, 3 parts.

The floors of manufacturing buildings may vary all the way from the primitive dirt floor of the ordinary forge shop to the polished hard wood floor of the modern watch factory. They may be divided into two general classes, as ground floors and upper floors, and then into six classes, as follows:

First.—Those composed exclusively of earth, usually clay and sand or clay and fine cinders, tamped hard.

Second.—Those composed of layers of earth, concrete and sand, as the floor of an iron foundry.

Third.—Those composed of stone and concrete, sometimes covered with wood plank, as the ground floors of machine shops equipped with very heavy machinery.

Fourth.—Those composed of stone or bricks, as required for engine and boiler rooms, yard walks, etc.

Fifth.—Those composed of wood, supported by steel beams, as the upper floors of machine shops, factories, etc.

Sixth.—Those composed of wood supported by wooden beams, as the upper floors of machine shops and factories of a cheaper form of construction.

The kind of floor to be adopted will depend upon the situation, the kind of work to be done upon it, and the weight of machinery and material which it must support. In the choice of materials, it must not be forgotten that there are those of each kind that

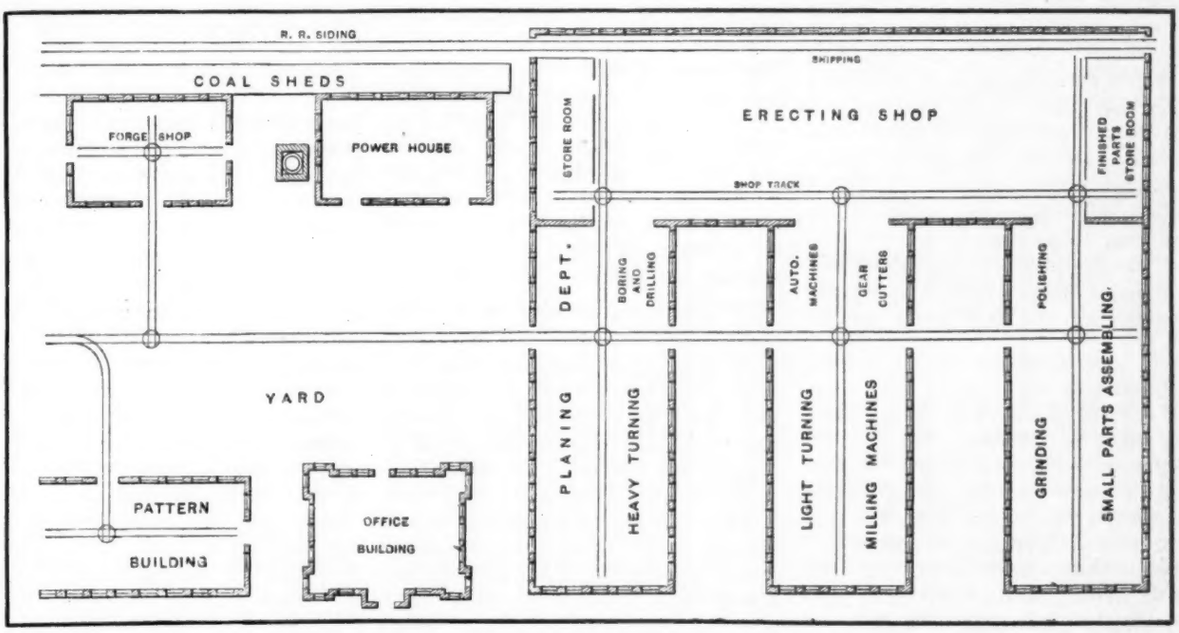


FIG. 2—PLAN VIEW OF MACHINE SHOP HAVING THE ERECTING BAY AT RIGHT ANGLE TO THE MACHINERY DEPARTMENTS

might be perfectly adapted to use in other portions of the work of construction, but which would be objectionable in a floor.

Stone should be of such a nature as to wear smooth and hard, and not crumble away, therefore we use granite, and sometimes slate. Paving bricks should be hard and tough, not easily broken. Specially made paving bricks wear nearly as well as stone. When gravel is used it should be free from dirt, although there is no objection to sharp sand. If earth is used for a floor it must contain a considerable amount of clay to give an adhesive quality to the mass.

Boards and planks should be so cut from the log that the natural grain of the wood will be, as nearly as may be, at right angles to the surface. If parallel or less than 30 degrees to it the surface is liable to wear rough and splinter. When planks are used for floors they should be from 2 to 3 inches thick and either tongued and grooved to each other or both edges grooved and the tongue or spline formed of a separate strip. To make a really good floor the planks should be planed to an equal thickness, and over them should be laid a 1¼-inch hard maple floor, which may be conveniently renewed as it wears out.

Walls.

At present these are usually built of stone, brick, concrete, or of steel backed with brick or concrete and upon the workmanship the strength and rigidity of the building will, to a great extent, depend. All spaces between bricks or stones should be completely filled with mortar. Unless specially insisted upon this will not usually be done. This is generally called "full flush work." If concrete is used the most watchful care will be necessary to secure good work.

The thickness of walls will depend upon the material, the height of the wall, the weight of the roof, and of upper floors, if there are such. For the machine shop as described is this article the walls are of brick. For the first story they are 20 inches thick, supported by buttresses 24 inches wide and 8 inches thick. For the second story they are 16 inches thick, and the buttresses 4 inches thick.

Walls are built in a continuous, vertical line on the outside and offset on the inside where the thickness is reduced. Stone walls are usually 4 to 6 inches thicker than brick walls, when used under like conditions as to height and load.

Roofs may be generally classified as flat and pitch roofs. Flat roofs will have an inclination of from ½ to 1 inch per foot; pitch roofs have an inclination of 3 inches per foot and over.

Flat roofs are used in the cheaper forms of construction and are usually covered, either with roofing paper mopped with hot tar, and over this tin, kept well painted; with two or three thicknesses of roofing paper similarly treated and finished with a layer of coarse, clean gravel; or with the specially manufactured roofing covering.

Pitch roofs are covered with boards and slate, or with boards covered with roofing felt. The best roof will be covered with corrugated iron, its tendency to collect moisture, or "sweat" on its underside being prevented by laying on first, wire netting of coarse mesh, than a thickness of asbestos paper, to lessen the fire risk, than a thickness of tar paper to exclude moisture, and lastly the corrugated iron, which should be kept well painted. No boards or planks are needed, the framework, whether of wood or steel, being placed at convenient distances for properly fastening the roof covering.

Of late years another very useful kind of roof has come into use, called from its peculiar form the "saw-tooth roof." It is composed of alternately long and short inclines in opposite directions; the long inclines being 15 degrees and the short inclines 60 degrees to the horizontal. The long inclines are the roof surfaces proper and the short inclines are composed almost entirely of windows. By this means large areas of one-story buildings may be as well lighted in the center as at the sides. These roofs are supported and covered in the same manner as the ordinary pitch roof. In this construction the windows should face in a northerly direction whenever possible, so as to avoid glaring sunlight.

Pitch roofs and the saw-tooth form may be supported by either wood or steel trusses. At present the latter material is used in a majority of cases, except for wooden buildings or those of comparatively cheap construction.

While the selection of proper materials is very important, since good work can only be produced from good materials, good workmanship should be insistently demanded, since poor workmanship may not only waste or spoil good material, but produce defective and unsightly work from any kind.

Power Factor of Electric Furnace Circuits

Dealing with the power factor of electric furnace circuits, *Metallurgical and Chemical Engineering* observes that in electric furnace plants operated by alternating current it is especially important to look at the power factor problem from the standpoint of future increased size of furnace units. In small furnaces such as those which are used for experimental work, from 25 to 100 kilowatts, the power factor is high, being from 96 per cent, in the first named capacity, to 85 to 90 per cent in the second named capacity; but as the watt rating of furnaces increases, other things being equal, the power factor decreases.

Underground Haulage

In underground haulage, practice on the continent has been developed along lines different from the English, and similar to the American system, according to *The Engineer*, London. On the continent, except on inclines, a haulage rope is rarely seen. The use of locomotives is almost universal; they are operated by petrol, benzine or compressed air, and, in open lamp pits, sometimes by electricity from trolley wires. The difference in practice is interesting, and it is not accounted for by difference in the mining conditions, but rather by the personal predilections of the officials.

The partnership of Matlack & Bates, Philadelphia, has been dissolved by mutual consent and a new partnership has been formed by F. Warren Marshall and Howard C. Matlack, under the name of Marshall, Matlack & Co. The firm will engage in the sale of pig iron and coke, with offices at 1119 Pennsylvania building, Philadelphia. Marshall, Matlack & Co. will continue the business of Matlack & Bates and have assumed all obligations.

Theodore Geissmann & Co., Inc., Commercial National Bank building, Chicago, have been appointed district sales agents by the Newport Rolling Mill Co., Newport, Ky., for the sale of this company's line of galvanized, blue annealed and one-pass cold rolled box annealed open-hearth steel sheets, as well as roofing materials.

Antioch, Cal., is contemplating the installation of a municipal waterworks and electric lighting plant.

Oxy-Acetylene Process of Welding and Cutting[1]

A Discussion of Autogenous Welding With Specific Reference to the Davis-Bournonville Equipment

By Henry Cave

Autogenous welding is the uniting of metals into one solid mass by fusion without the intervention of a different metal. There are several types of autogenous welding, the one we are going to discuss being carried out by means of the oxy-acetylene flame, that is acetylene gas burned with pure oxygen, which gives a flame temperature of 6,300 degrees. The foundryman's burn is really autogenous welding; he uses a large mass of molten metal poured over the piece to bring it to a liquid state, and when this point is reached, the pouring stops and the metal remaining in the mold forms part of the piece to be welded. There is a type of electric welding called arc-welding which is autogenous, the electric arc being used to fuse the parts together; the ordinary form of electric welding is not autogenous as pressure is required to force the parts together. The ordinary blacksmith's form of welding is not autogenous, as the parts are merely brought to a plastic condition and hammered together. Brazing and soldering are not autogenous as a different material of a lower fusibility than the parts to be welded is used to run in between the parts on which the work is being carried out. Thermit welding might be termed partly autogenous, as the metal used might be of the same nature as the parts being welded, and it is merely used to raise the temperature to the melting point similar to the foundryman's burn.

The first inception of the oxy-acetylene process was in 1895, in France. Le Chetalier, the well-known scientist, discovered that by burning acetylene with pure oxygen, a temperature of 6,300 degrees could be obtained. This was immediately after the commercial development of calcium carbide to produce acetylene at a reasonable price. It was not, however, until 1901 that the process could be used, owing to the practical considerations of making a satisfactory torch. The difficulty of uniting oxygen and acetylene in a torch, and keeping the flame burning on the outside can be appreciated as they have a tendency to unite at the point where they first come together. This, in the early trials, was prevented by the use of a hydrocarbon gas with acetylene. In 1903, however, early difficulties had been overcome, and a really practical torch was placed on the market in France. It was not until 1906, however, that an equipment was brought to this country for actual manufacturing purposes, though a torch was imported in 1904 and was used experimentally; from that time, however, there has been rapid development in both the equipment, the uses for the process and the method of carrying out the work.

Use of Flame.

A good idea of the temperature, 6,300 degrees Fahr., can be imagined if one considers a thermometer with a scale eight inches long between freezing and boiling. This thermometer would have to be about 21 feet long to measure the temperature of this flame on the same scale. The method of using this flame is to merely melt the parts together, which could be termed recasting locally. Where a part has considerable thickness, it is necessary to remove the metal so as to form a groove; the flame is then applied to the feather edge at the bottom, and this is fused together, metal being added and fused to the walls of the groove until it is entirely filled, and if necessary, additional metal can be built on, so as to increase the strength and dimensions far beyond what it was before. Of course, metal can be built on even if there is no break to repair, so that parts can be strengthened before they break or metal removed by accident or mistake may be replaced, defective materials and workmanship being corrected. All metals can be welded in this manner.

The reason why a temperature of 6,300 degrees is necessary, when the ordinary metals melt at not over 2,500 degrees Fahr., is due to the conductivity of the metal. The conductivity is so great that the heat is drawn away from the point where the flame is supplied into the body of the metal nearly as rapidly as the heat is applied by a temperature flame, with the result that a large mass of metal is brought to a red heat instead of merely at the point where the weld is required. This results in the warping or scaling of the parts to be welded. With the oxy-acetylene flame the heat is directed into the metal so rapidly that the conductivity has not time to draw it away, with the result that metal begins to fuse when the surrounding parts, two or three inches away, are cool enough to touch, and before any large amount of surface is brought into action to radiate the heat. The metals of higher conductivity, of course, require a larger flame, and a greater area is heated.

The cost of the process varies in direct proportion to the mass of metal that has to be heated, and, therefore, is not necessarily in proportion to the sectional area of the weld. The only reason why this high temperature is required is on account of the concentration of the heat and, therefore, the rapid penetration at that point. It readily can be seen that where a weld has to penetrate any depth, the flame being applied to the surface will melt the metal at that point, and a continuation of the application of the flame will merely burn that metal away, and not until then will the metal below the surface be fused. It is, therefore, useless to try to make a lap weld or one of any depth without grooving-out the parts to be welded. The reason why the oxy-acetylene flame gives a temperature of 6,300 degrees Fahr. is due to the fact that acetylene is composed of 92.8 per cent of carbon and the balance hydrogen. This large amount of carbon requires a large amount of oxygen for complete combustion, and when acetylene is burning in the air, sufficient oxygen cannot be obtained for complete combustion. The result is that the gas has to spread out through a considerable space to obtain the necessary oxygen and, therefore, the temperature is reduced. It will be noted when the acetylene is turned on the torch and ignited, the flame has a considerable length and is very

[1]Presented before the Pittsburgh Foundrymen's Association.

smoky; when the oxygen is turned on, this flame is reduced in length to about ⅜ inch, the heat being concentrated into that space. It will be seen also that when the oxygen is turned into the torch, that there are two distinct flames, the short flame being very bright in color, but the other spreads out and is not so noticeable; this is due to the fact that hydrogen and oxygen together form water and, therefore, cannot unite above the dissociation point of water.

The Equipment.

The equipment consists of a cylinder of dissolved acetylene and a cylinder of oxygen, the necessary reducing valves, hose connections to the torch, the torch itself and the tips wherein the mixture is produced and at the end of which the flame burns. The dissolved acetylene cylinder is used for portable work, whereas the high pressure generator is used for stationary work, the acetylene being produced from calcium carbide. The peculiar feature of the equipment is that it is possible to obtain a material from which a flame of 6,300 degrees of temperature can be projected. The material of the tip is common brass. The flame does not actually touch the brass, it being projected an infinitesimal distance away, due to the pressure of the gases, and what small amount of heat is radiated back into the tip is carried off by the cool gases passing through. The process would be absolutely inoperative if it was necessary to have the tip to resist the temperature of the flame.

The process of welding which will be discussed is termed the Davis, Bournonville high-pressure, positive mixture equipment. To insure a homogeneous mixture of the gases, the acetylene is used at a pressure of 15 pounds per square inch. The gases come together at right angles in the tip, and as both are under pressure, a very close molecular contact is obtained.

The extent to which the welding of cast iron can be carried is well-illustrated by the welding of automobile cylinders, in which the crown of the combustion chamber has been broken out. It is necessary to remove the section of the water jacket so as to weld the break from the outside; this section is then welded back in place and if the part is not available, a piece of sheet steel can be formed to fit the cylinder and can be welded in place. The repaired part cannot be distinguished after it has been cleaned.

Broken gear teeth can be filled in with new metal and the tooth will be as good as the one that was broken out. We have welded teeth on a gear having a 22-inch face, 6½-inch pitch, 15 feet in diameter, and weighing 16 tons.

The process can be used for correcting errors in workmanship or design or defects in material, such as blow-holes and cold laps.

Another extensive application of this process is in cutting steel and wrought iron by a jet of oxygen. It is not possible to cut cast iron by this means owing to the free carbon in it's composition. This process is really a development of the laboratory experiments of making a jar of oxygen, heating an iron wire to a red heat and inserting it in the jar of oxygen when it will begin to glow and scintillate. The oxy-acetylene flame is used to heat a spot of metal on which a jet of oxygen is projected; the oxygen combining with the red hot metal. This is used for such purposes as cutting irregular shapes which cannot be cut satisfactorily by other tools.

The heat from the oxy-acetylene flame can be used for a number of purposes other than welding and cutting, such as making short heats either to straighten parts or to bend them. It also can be used for hardening parts locally.

Iron Ore in 1911

Preliminary estimates of iron ore sold in 1911 were sent to the geological survey by 26 of the largest iron-mining companies in the United States at the close of the year. The combined output of these companies represents more than 80 per cent of the total production of the United States. From these returns it is estimated by E. F. Burchard, of the survey, that the total quantity of iron ore marketed in the United States in 1911, not including stocks left at the mines, was between 43,000,000 and 46,000,000 long tons. This quantity represents a decrease of 22 to 24 per cent of the sales for 1910, which aggregated 56,889,734 long tons. The output for 1910 was the largest quantity of iron ore ever marketed in a single year in the United States, and according to the present estimate the quantity produced in the year 1911 will take fifth place, being exceeded by that of 1910, 1907, 1909 and 1906 in the order named. It is estimated that of the ore produced in 1911 between 39,250,000 and 42,000,000 long tons was of brown hematite, magnetite, and iron carbonate ores. According to the returns received the Lake Superior district, in Minnesota, Michigan and Wisconsin, apparently produced between 33,000,000 and 35,000,000 long tons of red and specular hematite, which represents a decrease of 23 to 28 per cent compared with the produced hematite, the remainder consisting tion of 1910—46,328,743 long tons.

In the Birmingham district, Alabama, the second largest iron mining center, the production of iron ore apparently decreased 18 to 20 per cent from that of 1910, the estimated production for 1911 being between 3,050,000 and 3,125,000 long tons, compared with 3,802,115 long tons in the preceding year. The ore mined in the Birmingham district consists of red and brown hematite in the proportion of about 4 to 1.

The production of iron ore in Tennessee and Virginia apparently decreased only about 16 per cent, according to reports from the principal producers in those states.

As the production of pig iron for 1911 may exceed 23,500,000 tons, a larger production of iron ore might appear to be required than has been estimated above, but it must be considered that at the close of 1910 there was 9,408,235 long tons of iron ore in stock at the mines in the United States, and that of this total 8,471,108 long tons was at the mines in the Lake Superior district. Just how heavily this surplus stock of ore was drawn upon in 1911 it is impossible to state at present, but owing to the increased activity in the manufacture of pig iron toward the close of 1911 it is probable that the 1910 surplus was in part cleaned up and that at the end of 1911 only a relatively small quantity of iron ore remained at the mines.

The firm of Scully, Jones & Co., Chicago, has been organized by James A. Scully and Geo. E. Jones, for the purpose of dealing in foundry equipment and supplies, machine tools and railway appliances. Mr. Scully was formerly works superintendent for the Whiting Foundry Equipment Co., Harvey, Ill., and Mr. Jones was in charge of inspection and outside erection for this company.

In a four-page folder, the Midland Machine Co., Detroit, manufacturer of molding machines, illustrates the Grimes jolt-ramming, roll-over core machine, roll-over molding machine and a stripping or drop plate machine.

Iron and Steel Securities

The New York stock exchange last week failed to respond to numerous favorable developments, chief of which was the very satisfactory report of the Steel Corporation. The price movement was downward during the early part of the week, followed later by an irregular advance.

Monday, the tone of the market was heavy; bond market was active due to accumulated surplus funds in banks; cotton market was strong and higher; foreign markets were irregular. Tuesday, deliveries of securities were suspended because of inability to gain access to the vaults in the Equitable building; market was dull and closed weak and lower; Berlin market was weak. Wednesday, closing prices were 1 to 2 points higher; foreign markets were weak. Thursday, pressure on several prominent stocks sent the entire list to a lower level; London market was depressed by prospects of a renewal of labor troubles. Friday, the market was irregular, the more prominent issues closing fractionally higher; foreign markets were unsettled. Saturday, trading was dull and the market closed weak at the lowest.

Money on call ranged between 2¾ and 2 per cent. Time money was offered with greater freedom but the amount of business was somewhat restricted. The actual conditions of clearing house institutions showed loans increased $38,126,000; net deposits increased $60,314,000; total reserve, 19.3, against 19.1 the preceding reserve $34,950,300, an increase of $7,711,200. Non-member banks and trust companies showed loans decreased $988,700; net deposits decreased $1,281,900; reserve on deposits increased $49,500, and the percentage of reserve, 19,3, against 19.1 the preceding week. Fortnightly railroad statistics showed an increase in the number of idle cars, of 59,124. Bank clearings showed a decrease of 5.7 per cent from the preceding week, and 2 per cent from the corresponding week last year. Commercial failures numbered 381, compared with 407 the preceding week and 344 the corresponding week last year. Shares were sold to the number of 2,512,861, compared with 1,949,700 the preceding week and 2,652,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $25,273,000, compared with $18,435,000 the preceding week, and $16,005,000 the corresponding week last year.

	Clos'g Quo. Jan. 13	Changes in week.	Annual Meeting date 1912	Stock Outstanding	Basis.	Dividend Last Dividend	Dividend Date Last Div. Pay
Allis-Chalmers	¾	— ½		$19,820,000		.....	
Allis-Chalmers, pr	8	.....		16,050,000	7 cum.	1¾ Q.	Feb., 1904
American Can	11½	— ⅜	Feb. 6	41,233,300		.....	
American Can, pr	92¾	+ ½		41,233,300	7 cum.	1¼ Q.	Jan., 1912
Am. Car & Fdy	53	—1	June 27	30,000,000	2	½ Q.	Jan., 1912
Am. Car & Fdy., pr	116½	+ ½		30,000,000	7 n. c.	1¾ Q.	Jan., 1912
American Loc	34⅝	—1⅜	Oct. 15	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	103	—2⅞		25,000,000	7 cum.	1¾ Q.	Jan., 1912
American Ship	49½	.....	Oct. 9	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	103¼	.....		7,900,000	7 n. c.	1¾ Q.	Jan., 1912
Am. Steel Foundries	33	—2½	Mar. 21	17,184,000	5	1¼ Q.	May, 1911
Barney & Smith	10	—5	June 4	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	80	+10		2,500,000	8 cum.	2 Q.	Dec., 1911
Bethlehem Steel	31	— ¼	April 2	14,862,000		.....	
Bethlehem Steel, pr	60	—1		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43	.....	Mar. 19	45,000,000*	5	1¼ Q.	Nov., 1911
Cambria Iron	44¾	.....		8,468,000*	4	2 S. A.	Oct., 1911
Chicago Pneumatic Tool	48¾	+1	Feb. 19	6,448,800	4	1 Q.	Jan. 1912
Colorado Fuel	26⅞	— ⅛	Oct. 21	34,235,500		1¾ Q.	April, 1902
Crucible Steel	12¼	— ⅜	Nov. 15	24,578,400		.....	
Crucible Steel, pr	83	— ¼		25,000,000	7 cum.	1¾ Q.	Dec., 1911
Empire Steel	10	.....	Feb. 28	1,254,770		.....	
Empire Steel, pr	36	.....		2,500,000	6 cum.	2 S. A.	July 1911
Fay & Egan	70	.....	Feb. 20	1,000,000	7	1¾ Q.	Nov. 1908
Fay & Egan, pr	110	.....		1,000,000	7 cum.	1¾ Q.	Nov., 1911
General Electric	159½	+4⅛	May 14	77,281,200	8	2 Q.	Jan., 1912
Harbison-Walker	40	.....	Jan. 15	18,000,000	2	½ Q.	Dec., 1911
Harbison-Walker, pr	100	+1		9,600,000	6 cum.	1½ Q.	Jan., 1912
International Pump	30½	—2¾	Dec. 10	17,762,500		½ Q.	Apr., 1905
International Pump, pr	82	—1⅜		11,350,000	6 cum.	1½ Q.	Feb., 1912
Lackawanna Steel	30	.....	Mar. 13	34,978,000		.....	
Lake Sup. Corp	28⅝	+ ⅜	Oct. 2	40,000,000		.....	
New York Air Brake	55	.....	Mar. 13	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	95	+1	Feb. 7	8,500,000	6	1½ Q.	Dec., 1911
Niles-Bement-Pond, pr	104	.....		2,000,000	6 cum.	1½ Q.	Nov., 1911
Otis Elevator Co	70	—1½	Mar. 18	6,358,600	4	1 Q.	Jan., 1912
Otis Elevator Co., pr	96	.....		6,375,300	6 n. c.	1½ Q.	Jan., 1912
Pa. Steel	60	.....	May 13	10,750,000		.....	
Pa. Steel, pr	101½	.....		20,587,500	7 n. c.	3½ S. A.	Nov., 1911
Pittsburgh Coal	18½	.....	Mar. 12	28,104,600		.....	
Pittsburgh Coal, pr	82	—1½		27,071,800	7 cum.	1¾ Q.	Jan., 1912
Pittsburgh Steel Co., pr	101½	+ ½	Oct. 7	7,000,000	7 cum.	1¾ Q.	Dec., 1911
Pressed Steel Car	33¼	— ⅞	Feb. 21	12,500,000		1 Q.	Aug., 1904
Pressed Steel Car, pr	101½	— ½		12,500,000	7 n. c.	1¾ Q.	Nov., 1911
Pullman	160	+ ½	Nov. 13	120,000,000	8	2 Q.	Nov., 1911
Railway Stl. Spring	32	.....	Mar. 7	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	98½	.....		13,500,000	7 cum.	1¾ Q.	Dec., 1911
Rep. Iron & Steel	26	+ ⅛	Oct. 16	27,191,000		.....	
Rep. Iron & Steel, pr	85⅛	— ⅛		25,000,000	7 cum.	1¾ Q.	Jan., 1912
Sloss-Sheffield	44	.....	Mar. 13	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....		6,700,000	7 n. c.	1¾ Q.	Jan., 1912
U. S. Pipe & Fdy. Co	16	—1	June 26	12,500,000		1 Q.	Dec., 1907
U. S. Pipe & Fdy. Co., pr	50	.....		17,500,000		1¼ Q.	June, 1911
U. S. Steel	66⅛	—2¼	April 15	508,302,500	5	1¼ Q.	Dec., 1911
U. S. Steel, pr	110¾	— ¼		360,281,100	7 cum.	1¾ Q.	Nov., 1911
U. S. Steel 5s	102¼	+ ¼		465,189,500	5	.....	
Va. Iron, Coal & Coke	75	—8	Sept. 17	9,073,680		5. †	Oct., 1907
Westinghouse Air Brake	73	+5	Oct. 1	14,000,000*		5 Q.‡	Jan., 1912
Westinghouse Electric	157¼	+2¼	June 12	3,998,700*	7 cum.	1¾ Q.	Jan., 1912

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special.

Copper Stocks.

New York.—Amalgamated Copper closed 65⅛, a net loss of 1⅜.

Boston.—Butte Coalition closed 22⅜, a net loss of ⅝; Calumet & Arizona closed 62¼, a net gain of 1; Calumet & Hecla closed 442, a net gain of 7; North Butte Mining closed 27½, a net loss of ½; Quincy Mining closed 76, a net gain of 1.

Financial Notes.

The Dominion Coal Co. has declared the regular semi-annual dividend of 2½ per cent on preferred stock, payable Feb. 1.

The receivership proceedings instituted against the Vesper Safety Clevis & Malleable Iron Co., Vesper, Wis., have been turned into involuntary bankruptcy proceedings upon the demand of creditors who have been dissatisfied with the progress of the suit by the receiver.

THE IRON TRADE REVIEW

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Steel Market Conditions.

There is little occasion for the uneasiness felt in some quarters that new business has not been heavy in the steel trade in the first fortnight of the new year. During the period of heavy buying in the closing weeks of the old year, predictions were freely made that the customary lull would occur in the early part of the new year, on account of inventory and other annual settlements. The disposition to make fresh purchases is retarded, in addition, by the fact that material price advances have occurred. For buying to continue at the November-December rate would be to duplicate the unfortunate experience of 1909, when buyers pyramided their purchases and brought the steel industry to a rate of production which was not warranted by the actual consumption at the time. Steel producers do not want buyers to repeat that performance, and buyers would not do so in any event; the memory of that experience is too fresh.

In any market it is natural that a comparative lull should succeed a period of activity and price advances. Under open market conditions, a common course is for prices to advance by a certain amount, then recede by a lesser amount, then advance by a still greater amount, and so on. A continued advance, without either intermissions or recessions, is unusual and when it occurs it generally proves unsound in the long run.

A misapprehension as to the strength of the mill position, in amount of tonnage entered on books, usually is caused by failure to grasp the situation from a quantitative standpoint. If in a given period, a mill books double the quantity of material it ships, a certain degree of goodness is indicated. If in another period it books only one-half as much as it ships, an equal degree of badness is indicated. This is not a correct conception quantitatively. Assume, for instance, that a mill shipping 10,000 tons of material books 20,000 tons in a month. That is an excess of 100 per cent. Assume that next month it books only 5,000 tons; that is a deficiency of 50 per cent. The two do not balance. The 10,000 tons excess booked in one month will carry the mill not for one month of a 50 per cent deficiency, but for two months. The mills booked such an excess in November and December that it would require not two months, but several months, of relatively light bookings to work off the surplus. It is, indeed, the usual experience that after a period of activity the mill position remains sound for a longer period than was expected. After half a month of beginning-of-the-year quietness it is no time to infer that the improvement in the steel trade is done. The mills are in comfortable position for many weeks and there is ample time for increase in activity.

Let Iron and Steel Schedules Alone.

While the Payne-Aldrich bill was pending in congress, it was universally admitted that the attitude of the iron and steel manufacturers was eminently fair. The manufacturers went to Washington, made their arguments, gave all information that they could and stated that they had no objection to a reasonable revision of the tariff. When the bill was finally passed, the sentiment of the country was that no complaint could be made on account of failure to revise the iron and steel schedules downward. In the campaign following the enactment of the law, there was practically no criticism of the iron and steel schedules, and the most ardent free trader had nothing to say. There was a great deal of criticism, and much of it deserved, of the cotton, woolen and other schedules, and the result of the election might perhaps be considered a demand for further revision of some of the schedules. There was, however, nothing during the campaign to indicate that the popular verdict was in favor of further revision in the iron and steel schedules.

In spite of all these facts, it is now announced at Washington that a further revision of the iron and steel schedules is proposed, and that probably the rates named in what is known as the Cummings bill will be adopted by the ways and means committee of the House. We believe that such revision is not demanded by public sentiment and it is not consistent with proper treatment of the country's greatest manufacturing industry by congress. We are firmly of the opinion that if the present congress will content itself by adjusting manifest and real inequalities in the tariff law and let alone schedules which meet the approval of the country, it will serve the interests of all the people much more than it possibly could by a revision to further cripple an industry which has had much to contend with during recent years.

Pig Iron Consumption in 1911.

It is stated on trustworthy authority that total pig iron stocks on the banks of steel works and merchant furnaces in the United States at the beginning of 1912 were about 1,600,000 tons. This is a decline of from 400,000 to 500,000 tons from the high point of the year and it is contrasted with a heavy increase in stocks during the calendar year of 1910. In at least one district, that of Virginia, a large portion of present stocks represents an accumulation from the depression of 1907, but most of today's general supply in the country has been more recently gained.

The policies of the leading steel companies in the country in the year have turned strongly to the reduction of stocks and to the prevention of further accumulations. In the case of the United States Steel Corporation, the supply of iron on hand has been steadily reduced, until it is of very modest proportions

at present. This has been the usual procedure with most of the direct consumers of iron. It may be said, therefore, that the great portion of present furnace stocks is in the hands of merchant interests.

The production figures of THE IRON TRADE REVIEW for 1911 show that 23,200,000 tons of coke and anthracite pig iron were produced. This compares with approximately 26,900,000 tons in 1910 according to official returns. In the light of the fact that stocks were largely reduced in 1911, while they were heavily increased in 1910, the significance of the practically 3,700,000 tons decrease in production in 1911, compared with the previous year, loses much of its significance as a trade barometer.

The cautious attitude of buyers throughout the past year discourages any belief that stocks of pig iron of these interests were increased largely during that period. Though there is no reliable check available upon such conditions, it is a fair assumption from the general conservative policies followed that iron was bought no more freely than it was being used and the weight of indication is that consumers' stocks, whatever they may have been at the beginning, have also decreased in the year.

The significance of these changes in stocks among producers and consumers in the year, is that there was undoubtedly a heavier consumption of iron than the production figures would indicate and that on the scale of tonnage actually melted the year of 1911 deserves to be ranked in a more favorable light, when compared with its immediate predecessors.

Counseling and Fighting.

When before the Stanley committee of the House of Representatives last Thursday, Mr. Carnegie was examined at great length concerning his apparent ignorance as to the Sherman law during the ten years preceding his retirement from business. In view of all the agitation that has taken place in more recent years, it may seem surprising that Mr. Carnegie knew so little about the Sherman law, but the fact is that almost the only effective enforcement of the Sherman law prior to Mr. Carnegie's retirement, was the proceeding against the Trans-Missouri Freight Association, instituted by Attorney General Harmon, and, as Mr. Carnegie testified, the law, in the minds of the public, was believed to relate largely to the railroads. Some of the members of the committee seemed to take pleasure in pointing out that Mr. Knox, and other attorneys of the Carnegie Steel Co., had not warned Mr. Carnegie that pools and other agreements of steel companies were in violation of the anti-trust law.

"What did you have attorneys for?" asked Mr. McGillicuddy.

"To appeal to in case of suits," was Mr. Carnegie's reply.

This reply expresses the old-fashioned idea of a lawyer, that is, a man of legal attainments employed to appear in court and prosecute or defend law suits. The newer and better idea is that a lawyer is a counselor, whose duty it is fully to advise his clients as to their rights and their duties. An attorney representing a steel company, for instance, finds that it is his business more frequently to give advice and prevent law suits than it is to appear in court. Not only has there been this general change in the idea of a lawyer, due to various causes, but more specifically there is an earnest desire on the part of the corporations to obey the law and lawyers are expected to be of assistance in helping their clients to observe the spirit and the letter of all statutes. Mr. Knox's failure to advise Mr. Carnegie may have been excusable 20 years ago. It would not be today.

Regulation of Big Business.

If the Standard Oil Co. had not been organized by the Rockefeller group of capitalists, it would have been organized by some other group. The Standard Oil Co. is simply an inevitable, economic evolution in the development of a new country. The recent decision of the supreme court in dissolving the parent company of New Jersey and dividing it into a number of subsidiaries accomplished nothing whatever except to make it more cumbersome and expensive for the company to do business. The consumer is in no way protected from the evils long complained of and he will pay just as much for his gasoline. It ought to be possible to frame some comprehensive law whereunder business might operate without molestation and moreover whereunder the rights of the consumer would be conserved. In a business way, this country has gone along now for nearly 30 years without anyone knowing exactly his rights or his duties. Other countries, notably England and Germany, seem to have solved the problem of regulating business. At any rate, we get no echo from abroad of those disturbances which are so common here. The first duty of this country is to define a national policy towards business. It does seem as though this solution would be found in a national incorporation law. This document need not be complex; it could be very simple. If it were clearly understood that no corporation doing interstate business could issue a share of stock unless it had assets back of the issue to justify it, that every share of stock issued should represent 100 cents on the dollar paid in in cash or its equivalent, that annual statements should be published of every corporation doing an interstate business in order that the people might have absolute knowledge of its assets and liabilities, and if every concern doing an interstate business were compelled under penalty of punishment to sell its goods at the same figure, plus the freight rate, in all parts of the country, there would be little left of which to complain.

Over-capitalization, exorbitant prices in one state and cut-throat prices in another for the same article, have been the chief curses of American commercial life. It ought not to make any difference how big a business is. The inevitable tendency is towards bigness. Legislation can no more stop this tendency than it can stop water from flowing. The only thing that the country can do is to regulate it.

Rather Expensive.

(Washington Post.)

The steel committee is getting a lot of publicity out of the examination of Mr. Carnegie, but it is not bringing out any facts worth while.

The Carnegie testimony is interesting as a personal memoir, but the country is paying a pretty high rate for his batch of reminiscences. The committee cuts a poor figure in trying to extract any valuable information from him. Perhaps he hasn't any. If he has, it can be brought out in court, in the trial of the steel trust. The steel committee is wasting time and public money in pursuing its farcical "investigation".

Manufacturers Pay Tribute to Chas. M. Schwab

Who Speaks of the Present as the Time of Lowest Prices and Highest Wages in the History of the Steel Industry

Tribute to the achievements of Charles M. Schwab, master steelmaker, upbuilder of industry and successful American citizen, was paid by 350 business men at the Bellevue-Stratford hotel, Philadelphia, Thursday evening, Jan. 11. Upon that occasion, the chief executive officer of the Bethlehem Steel Corporation and the former president of the United States Steel Corporation, was the guest of honor at a testimonial dinner given in his behalf by the iron and steel section of the Manufacturers' Club, Philadelphia.

The dinner was graced by the presence of many men of prominence in public and business life. Many of them were Mr. Schwab's personal friends and they came to represent varied lines of industry and professional life in their appreciation of the genius and even romance that have characterized the career of the guest of the evening. The iron and steel industry was largely in evidence, particularly the eastern district, from which practically a full delegation of leading iron and steelmakers was present. There were also men of prominence in the iron and steel trade from Pittsburgh and other sections in attendance.

The banquet was given in the grand ball room of the hotel, which presented a scene of unusual beauty, as the decorations were elaborate and tasteful. The proscenium boxes were occupied by numerous parties of ladies who were wives and friends of the guests. Charles Mapes Dodge, of Philadelphia, acted as toastmaster, and was introduced by Nathan T. Folwell, president of the Manufacturers' Club.

Mr. Schwab's response was characteristic. He filled it with interesting reminiscences of a personal nature that dated the span of his career in the steel industry from its lowly beginning to the position of guiding influence of the affairs of the greatest steel works of the country. He made his auditors stand with him in the mills in the days of Captain Bill Jones and John Fritz, and the lightness of his humor with which he surrounded these men in his anecdotes of the mills, in no way detracted from the high personal tributes of gratitude and respect that he paid to the achievements of these steel masters. Generally of a jovial and comrade-like vein, his remarks at several points dropped to the serious consideration of the great questions that are confronting the steel industry and large business enterprises. He stoutly defended the idea that underlay the formation of the United States Steel Corporation as involving a fundamental economic principle which had justified itself through the benefits it had given to the general public. To dissolve the Steel Corporation, Mr. Schwab said, would result in the loss of these advantages to the general industry and the country and in the readjustment the brunt of the consequences would be borne by labor.

The Past Versus the Future in the Steel Industry.

(An anecdote from Mr. Schwab's address.)

In 1887, we designed a rail mili at Braddock and I wrote Mr. Carnegie that the new mill when completed would roll 1,000 tons of rails a day.

Mr. Carnegie wrote back that he did not object to how much money we spent on the mill or how extravagantly we planned or designed it, but he said, "I want you to promise me that you will never tell anyone that we would be fools enough to suppose that the country would ever want 1,000 tons of rails a day."

In 1880, the steel production of this country was less than 1,000,000 tons; in 1890, it arose to 5,000,000 tons; in 1900, to 19,000,000 tons, and last year to about 23,000,000 tons. I predict that within 10 or 15 years we will be producing 40,000,000 tons of steel annually and then all the other countries of the earth will have to stand from under.

Pays Tribute to Instructors.

Mr. Schwab prefaced his remarks by declaring that he was scarcely deserving of the honor that was being tendered him and said he felt there were certain names in the steel industry with which he had been closely associated and he thought it was 'fitting on the occasion that he pay his debt of appreciation and respect to those early instructors. "Of Captain Bill Jones and Uncle John Fritz, I want to say a word," said he. "We speak of our great natural resources, but what would the development of these have been in the steel industry without the genius of these men? The invention by Jones of the metal mixer and by Fritz of the three-high rolling mill have meant a saving of $5 a ton on each ton of steel produced in this country. As we have made 25,000,000 tons in one year in this country, you can see what the two ideas of these two men have meant to the manufacturers. These are the men who deserve the great praise in the iron and steel industry.

"I have seen many interesting developments in the steel industry, I have seen many interesting characters, but I have seen none more interesting than that of Captain Bill Jones—a great genius—unskilled and unlettered in the scientific part of the steel mills. I remember when the Pennsylvania railroad first specified a certain analysis of steel in its steel rail order. We had no chemist in the mills those days, but one was immediately secured. The analysis specified by the railroad, I think, was for steel of 0.30 to 0.40 carbon. Our chemist's analysis of the steel made would show 0.15 to 0.20 in carbon. Thereupon Bill would say to the chemist: 'You know that this is a mistake,' and he would strike out the 0.15 and write in 0.35. Then he would turn to me and say, 'Charlie, this d——n chemistry is going to spoil the steel business yet'.

"I want to say a few things which I think are necessary to give the United States pre-eminence in the iron and steel industry and to give us pre-eminence as a nation in the markets of the world," said Mr. Schwab. "The United States Steel Corporation was formed to secure economies of combined production which permit one plant to be operated upon one product instead of having a number of

mills run upon numerous products of a varied nature. I claim that any system of legislation that will destroy the most economic possibilities of industry is legislation that is going to hurt and injure the steel industry. Before coming to the dinner, I obtained some figures from Mr. Farrell, president of the United States Steel Corporation. He told me if the Steel Corporation were to pay today the same wages it did in 1901, it would have saved $31,000,000. Such a combination as the Steel Corporation has enabled the manufacturer to pay higher wages and in conditions like those of the present to avoid wage reductions. There has never been a period when the steel products have sold as low as during the past few months and there has never been a time when wages were so high. Why? Because the steel manufacturers have taken advantage of such consolidations to make their profits instead of taking them from labor. Labor is the only element of cost you can make less, as all costs, finally reduced, are labor. If you analyze back freight and supplies, you will find that they ultimately are wholly labor. The only way to reduce cost is to reduce wages. If the big steel corporations of the country are reduced to individualism, costs will increase and if they are denied the protection of tariff, labor must suffer.

Steel Corporation a Benefit.

"The United States Steel Corporation has benefited not only labor but the iron and steel manufacturers in all parts of the country. The independent steel companies have been aided by its operations. I have proposed to the independent steel companies that we ought to get together and compare our elements of costs, the same as the Steel Corporation does among its subsidiaries, which enables it to keep its costs uniform. I am perfectly willing that any steel manufacturer may have my costs if he will give me his.

"I am willing to admit that evils have crept into the affairs of big corporations and that there should be formed such a commission as the interstate commerce commission, which should have power to regulate the affairs of large industrial corporations. You will remember when the interstate commerce commission was formed, it was looked upon with fear by the railroads, but it is now generally appreciated that its organization was the best thing for them that ever happened.

"Speaking of what we have been able to accomplish at Bethlehem, our business there has increased a little more than 500 per cent in the past ten years. This means that eastern Pennsylvania has only entered upon the great period of manufacturing that its position and importance suggests. The east has within easy access to it untold millions of tons of ore which will not be exhausted for hundreds of years, while the Lake Superior regions are being depleted annually to the vast extent of about 25,000,000 tons. I make the prediction that eastern Pennsylvania has only started upon its career of manufacture, which will ultimately make it the greatest industrial center of the country."

Life of Charles M. Schwab.

1862—Born in Williamsburg, Pa., Feb. 18, 1862.
Son of John A. and Pauline Schwab.
Educated at St. Francis college, Loretto, Pa.
Became clerk in a grocery store in Braddock, Pa.

1881—Began work in Edgar Thomson Steel Works, Braddock, Pa.

1882—Made assistant to Capt. Jones, superintendent of Edgar Thomson Works.

1892—Became superintendent Edgar Thomson and Homestead Works.

1897—Elected president of Carnegie Steel Co.

1901—Elected president United States Steel Corporation.

1904—Resigned presidency Steel Corporation to become president Bethlehem Steel Corporation.

John Birkinbine, of Philadelphia, voiced a somewhat similar prophecy looking toward the upbuilding of the iron and steel industry close to the Atlantic seaboard, a district which in recent years has seemed to have fallen into a retrograde movement. He praised Mr. Schwab as "setting the pace" by his energy and resourcefulness toward an enlarged iron and steel industry in the eastern part of the United States. Mr. Birkinbine spoke especially of the abundance of ore deposits in eastern states.

Senator Penrose Speaks.

United States Senator Boies Penrose, of Pennsylvania, paid tribute to the prominence of those of German ancestry in the iron and steel development of the United States, in which no name stood higher, he said, than those of Schwab, Frick, Fritz and others. "I can better address myself to no branch of what has made the nation great than to the accomplishments of the iron and steel manufacturers of the present generation. Were it not for the energy, courage and creative genius of these men, the vast natural resources of our country might still be lying in the ground."

Charles Heber Clark, who welcomed Mr. Schwab to the dinner on behalf of the Manufacturers' Club, described the guest of honor as a public benefactor of high rank. The tribute, he said, he offered to Mr. Schwab was to the employer of labor, to the creator and to the genius which had been able to combine the elements of capital and labor successfully.

Remarks were made by Governor John K. Tener, of Pennsylvania, and Mayor Rudolph Blankenburg, of the city of Philadelphia. Both praised Mr. Schwab for his rise to eminence in the steel industry. Mr. Blankenburg ascribed success in business to the use of system in large corporations, and he declared the same business principles could be applied in the government of municipality. He said it would be of great advantage to the city of Philadelphia to have such principles followed and that with the co-operation of the citizens he hoped to dedicate his administration to that purpose. Governor Tener spoke reminiscently of his experiences in the great mill towns of western Pennsylvania, and said his first position on a baseball team was with the Captain Bill Jones nine, of Homestead.

Boilermakers' Convention.—The twenty-fourth annual convention of the American Boilermakers' Association, together with its associate members, and the Supplymen's Association, will be held in New Orleans, March 12-15. A large attendance of boiler manufacturers and supplymen from the United States and Canada is expected. The secretary is F. B. Slocum, Continental Iron Works, Brooklyn, N. Y.

Roberts Retained.—Frank C. Roberts & Co., Philadelphia, have been retained as consulting engineers for the blast furnace plant to be built by the Oriskany Ore & Iron Corporation, near Lynchburg, Va.

CARNEGIE TESTIFIES

Without Giving Much Information—Believes in Government Supervision.

Andrew Carnegie testified Wednesday, Thursday and Friday before the Stanley committee of the house of representatives. Mr. Carnegie was disposed to be garrulous and furnished considerable entertainment for the spectators by his interesting reminiscences and clever retorts, but he gave very few facts not already known to the iron trade. Referring to his purchase of Lake Superior iron ore properties from J. D. Rockefeller, Mr. Carnegie said: "It does my heart good to think that I got ahead of John D. Rockefeller, my fellow-millionaire, in that Lake Superior ore deal."

Mr. Carnegie insisted that when he sold his steel interests for $430,000,000, he made a poor bargain because he could have gotten $100,000,000 more if he had held out for it. Incidentally, Mr. Carnegie predicted that the price of ore would go up. The witness related the oft-told tale of how Conneaut might have been the site of a big steel plant. Mr. Carnegie expressed surprise that the Steel Corporation, instead of going to Gary to build its new works, did not select Conneaut. "If they had," said Mr. Carnegie, "I know that the United States Steel stock would be much more valuable than it is today."

In his testimony, Thursday, Mr. Carnegie stated that he recommended to President McKinley the appointment of Philander C. Knox to the position of attorney general. Mr. Knox was at that time one of the attorneys of the Carnegie Steel Co. Mr. Carnegie testified that Knox, although his attorney, had never notified him that the pools and agreements made by competing steel companies were in violation of the Sherman law. Mr. Carnegie told the committee that he believed that no protective tariff is necessary on steel rails or other steel products, with the exception of needles that are not manufactured in this country.

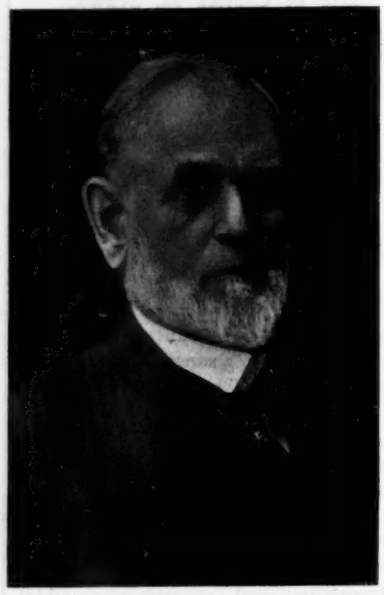
Mr. Carnegie expressed his belief in government regulation of business. "I believe," said he, "the government should regulate the maximum prices."

At the meeting of the committee, Friday, Mr. Carnegie's attitude toward imperialism and other irrelevant subjects, was given considerable attention. Mr. Carnegie took advantage of an opportunity which was presented to him to reiterate a statement made many years ago, that "Stock gamblers are parasites, feeding on values and creating none."

After a spirited debate, the house of representatives has voted Chairman Stanley an additional sum of $9,000 to carry on the investigation. President Farrell, of the Steel Corporation, has been served with a subpoena, returnable Jan. 22, to produce numerous books, papers and other documents of the Steel Corporation, which he is commanded to turn over to Expert Accountant McRae, of the committee.

Death of Franklin Farrel

Franklin Farrel, one of the oldest and most successful manufacturers of New England, died at his home in Ansonia, Conn., Jan. 10, after an illness of only about 12 hours.



FRANKLIN FARREL.

Mr. Farrel was born at Waterbury, Conn., Feb. 17, 1828. His father, Almon Farrel, was famous throughout the Naugatuck valley as a mill wright, engineer and builder. When only 14 years of age, Mr. Farrel went to work for his father, learning the trade of a mill wright. One of the first mills he aided in erecting was a paper mill at Westville, Conn. He went to Ansonia in 1844 and assisted his father in constructing the waterworks and copper mill in the town for Anson G. Phelps. In 1849, Mr. Farrel became associated in the foundry and machine business in the firm of Farrel & Johnson. Later the concern was reorganized under the name of the Farrel Foundry & Machine Co., and Almon Farrel became its president, an office which he held until his death in 1857. Franklin Farrel then succeeded to the presidency of this company, and served until his death. The company started with a capital of $15,000, and today has a capital of $1,200,000. The success of the company was due largely to Mr. Farrel's technical skill, shrewd judgment and untiring industry. In 1877, Mr. Farrel went to Butte, Mont., and with his brother-in-law, A. F. Migeon, there formed the Parrot Silver & Copper Co., which proved to be a very successful venture. In 1899, Mr. Farrel and associates sold their control of this company to the Amalgamated Copper Co. Mr. Farrel was also identified with the Bridgeport Forge Co., Bridgeport, Conn., the H. A. Matthews Mfg. Co. and other institutions of Connecticut. For a number of years, he owned a sugar plantation in Cuba and two in Santo Domingo. These interests he disposed of in 1901. Mr. Farrel was ever interested in his home city and in everything that made for the good of the community. He was a member of numerous clubs and a very active worker in Christ Episcopal church, of which he had been senior warden for 20 years.

American Brake Shoe Shows Small Decrease

The report of the American Brake Shoe & Foundry Co. for the year ending Sept. 30, shows net earnings of $1,028,808, a decrease of $34,861. The income account compares as follows:

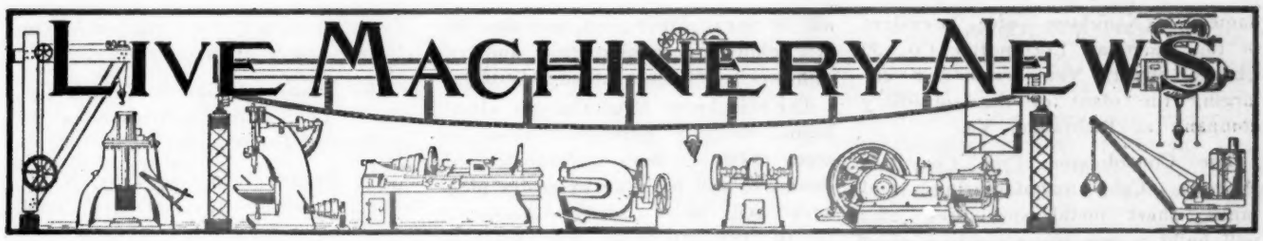
Earnings	$1,028,808	Dec.	$34,861
Interest	39,542	Dec.	1,443
Surplus	989,267	Dec.	33,417
Dividends	532,000	Inc.	84,250
Surplus	457,267	Dec.	117,667

The balance sheet, as of Sept. 30 last, shows cash on hand amounting to $552,049, against $353,909 in the year previous, total current assets $3,211,193, current liabilities $286,734, profit and loss surplus $2,933,811, and total assets and liabilities of $12,186,295.

The report states that there was an increase during the year in plant investment account of $306,604 for real estate, building, machinery and equipment. Of this amount $196,000 was expended on the new Chicago plant.

Temple blast furnace, which has been idle since February, 1909, was relighted, Jan. 14. This furnace, during its long period of idleness, was thoroughly overhauled.

LIVE MACHINERY NEWS



Last week's developments in the New York machinery field were quite satisfactory, some attractive business having been closed. Included in this were several good orders for machine tools, besides a large number of orders for smaller lots. It is believed that the Pennsylvania railroad, which purchased a few machine tools last week, is about to enter the market on a larger scale. Much other business is also in prospect. In Chicago, demand for machine tools is improving. The Great Western has issued a list and the Chicago & Alton is also in the market, while the Illinois Central expects to close in a few days on a list of machine tools, involving an approximate value of $16,000. In Cleveland, the city is taking preliminary steps toward the erection of a municipal electric lighting plant, to cost approximately $2,000,000. The Cleveland Electric Illuminating Co. has filed application for permission to expend $2,793,818.77; of this, $607,750 is to be expended in enlarging the lake shore power house, $125,120 in building a steam heating plant and $547,272 in building an underground cable and conduit. No machine tool business of importance is now before the trade in Cleveland; some fair-sized purchases, however, have been made recently by some small local manufacturing concerns. In Pittsburgh, prospects are considered promising for the first half of the year, although nothing of importance has been brought out as yet. Present indications are that an active demand for power transmission machinery will develop in that market in the next few months.

Machine Tools

The Benthall Machine Co., Suffolk, Va., is in the market for a used lathe.

The Morrow Mfg. Co., Elmira, N. Y., has closed for a number of machine tools in the New York market, aggregating about $20,000 in value.

The Macon Railway & Light Co., Macon, Ga., has appropriated $219,000 for building a substation, rebuilding its machine shop, purchasing machine tools, etc.

Plans are being prepared by the Lorain Coal & Dock Co., Wheeling, W. Va., for a steel building to be located at its Blaine works, in which will be located a modern blacksmith shop and a machine shop.

The Pennsylvania Railroad Co. placed orders for a number of machine tools during the past week, and it is thought that this is a fore-runner of more important buying which will be done by that interest in the near future.

B. R. Dickerson will open a machine shop in Paris, Ky., during the next few weeks. He is now connected with Spears & Sons, that city. General machine work will be done, but special arrangements will be made to take care of automobile repairing.

A machine shop for automobile repairing will be equipped in Covington, Ky., by the Kentucky Motor Car Co., which has been incorporated with $20,000 capital stock. Paul H. Hesser, Paul L. Bethell and William R. Allen are the incorporators.

The Kirk-Latty Mfg. Co., Madison avenue and West Eighty-fourth street, Cleveland, plans to overhaul its entire plant and make extensions where necessary. Considerable new machinery will be required but specifications have not yet been prepared.

The Oregon-Washington Railroad & Navigation Co., Portland, Ore., announces that contract will be awarded during the present month for the erection of buildings at Argo, near Seattle, Wash., costing about $50,000, to accommodate new machine and repair shops.

The San Diego Consolidated Gas & Electric Co., San Diego, Cal., plans the following improvements for 1912: Erection of new machine and woodworking shops; installation of new steam turbine unit at its electric power plant, with new watertube boilers to the extent of 1,000 horsepower, and auxiliary equipment; installation of new station gas governor. H. M. Byllesby & Co., Chicago, operate this property.

The Automatic Motor Plow Co., Sayre, Okla., recently incorporated with $200,000 capital, advises that it is in the market for foundry supplies, lathes, milling machines, planers, drills, grinders, tool grinders, saws and sharpeners, wood working tools for pattern shop, blacksmith equipment, shafts, hangers, tuyere gates for cupola, etc. The company will manufacture automatic motor plows, farm machinery and implements. H. Frank Carmichael is secretary.

New Construction

W. T. James, Chattanooga, Tenn., is considering plans for the erection of a small steel plant.

The Whitaker-Glessner Co. is making some improvements at the Martins Ferry, O., sheet mills, and some new machinery will be required.

The Santa Fe Railway Co., Los Angeles, Cal., is said to be planning for the erection of a new roundhouse and repair shops near National City, Cal.

The American Car & Foundry Co. is building a new erecting shop, 70 x 185 feet, at 2306 South Paulina street, Chicago, at a cost of $50,000.

The Cox Brass Mfg. Co., Albany, N. Y., will erect a three-story addition to its plant. Bids are being received by the architect, W. J. Obenans, Albany.

The Pacific Electric Heating Co., Ontario, Cal., manufacturer of electric heating appliances, will build an addition to its plant, comprising foundry and other buildings.

The Pyott Foundry Co., 310-14 North Sangamon street, Chicago, has taken out a permit to build a brick foundry, one-story, estimated to cost $1,000.

The Central Foundry Co., Oklahoma City, Okla., has decided to erect a new foundry, 70 x 150 feet, estimated to cost $15,000. Pressure of new business has compelled the move.

The Steel Co. of Canada, Ltd., at Hamilton, Ont., will according to announcement, expend $2,000,000 on extensions to its plant, which will be started at once.

The Kosmos Portland Cement Co., one of the largest southern producers, plans the enlargement of its plant at Kosmosdale, Ky. Its offices are in the Paul Jones building, Louisville.

Plans are being considered by

James McNaughton, vice president of the American Locomotive Co., 30 Church street, New York, for enlarging the plant of the subsidiary company at Richmond, Va.

The Consolidated Pipe Co., Los Angeles, Cal., manufacturing steel tanks, sheet metal specialties, etc., will build a new manufacturing plant at Bakersfield, Cal. A building permit has been issued.

The Inclined Gravity Hinge Co., San Diego, Cal., will build a branch manufacturing plant at St. Louis, Mo., for the manufacture of its patented hinge products. Frank C. Avery is secretary of the company.

The Amalgamated Sugar Co., Ogden, Utah, has acquired a site near Burley, Ida., and will soon commence the erection of a large beet sugar manufacturing plant to cost about $700,000. David Eccles is president of the company.

Plans are being prepared by the Witherow Mfg. Co. for doubling the capacity of its works at Sheridan, Pa. An order has been placed with the Bessemer Gas Engine Co. for a gas-driven compressor, and other awards will follow.

It is reported that plans are being prepared under the direction of E. B. Pleasants, chief engineer of the Atlantic Coast Line railroad, Wilmington, N. C., for shops that will be erected at Wilson, N. C., for the manufacture of freight cars.

The Joslyn Supply & Mfg. Co., 133 West Washington street, Chicago, is building a plant at the southwest corner of Morgan and Thirty-seventh streets. The building will be 90 x 125 feet, equipped for galvanizing and plating.

The A. & F. Brown Co., manufacturer of power transmission machinery, 172 Fulton street, New York, has filed plans for an addition to the manufacturing plant located at Elizabeth, N. J. The improvement consists of a foundry and chipping shed to be erected at a cost of about $20,000.

The Galion Iron Works Co., Galion, O., manufacturer of culvert pipe, road machines, agricultural implements, etc., recently decided to build a two-story addition, 60 x 150 feet, to its plant. The entire plant will then have a length of 520 feet. H. Gottdiener is president of the concern.

The Pacific Electric Railway Co., Los Angeles, Cal., has signed a contract with the Dominguez Land Co. for the removal of its local shops to Dominguez, about 12 miles distant. It is understood that the capacity will be greatly increased, and that the new plant for construction and repair work will cost about $250,000.

The Hackney Mfg. Co., St. Paul, Minn., recently purchased about 18 acres at the Minnesota Transfer, St. Paul, and will build an extensive plant which will have a daily capacity of 15 to 18 auto-plows and tractors. Building will commence in from eight to 10 months but plans have not yet been finished.

The Seevers Mfg. Co., a structural steel concern of Oskaloosa, Ia., has purchased land in South Peoria, Ill., for the erection of a plant, to which it will remove in the spring. The site contains 21 acres. The proposed works will be of steel and concrete. It is said that Peoria's freight advantage has caused the proposal to remove to be undertaken seriously.

The Kokomo, Marion & Western Traction Co., Kokomo, Ind., has purchased the property in Kokomo of the American Straw Board Co. It is the intention to convert this property into car houses and repair shops. Seven buildings will be constructed. Plans are being made for two brick structures, 50 x 150 feet and two others 50 x 100 feet, to be erected at once.

The Busch-Sulzer Bros.-Diesel Engine Co., St. Louis, has selected a site of 8½ acres, that city, and is planning to raze the buildings on it, after which a plant will be erected. It will consist of office buildings, power plans, several machine shops, a large foundry and several smaller foundries, blacksmith shops, testing shops, etc. The plant will be enlarged later.

Power Plant Equipment

Island, Ky., is contemplating the construction of an electric light plant.

Perry, N. Y., is considering the installation of a municipal electric lighting plant. Estimated cost, $15,000.

Sheldon, Ia., is considering the erection of an electric lighting plant in connection with its water system.

The city trustees, Antioch, Cal., contemplate the erection of a municipal electric lighting plant.

Bouton, Ia., will soon let contracts for the erection of an electric lighting plant.

Scott City, Kas., has voted in favor of bonds for the establishment of an electric lighting plant.

The Georgia Railway & Power Co., La Grange, Ga., is planning to build a power station.

The Lampass mine, near Cananea, Mex., plans for the erection of an electric power plant.

The Minnesota Gas & Electric Co., Albert Lea, Minn., contemplates the erection of a new power plant.

The Burden Iron Co., Troy, N. Y., expects shortly to install a small power plant for lighting purposes.

D. C. Mulling & Son, Partridge, Ky., are preparing plans for an electric lighting plant to be erected at Whitesburgh, Ky.

The Norfolk & Bristol Street Railway Co., Foxboro, Mass., contemplates the purchase of a boiler of 250 or 300 horsepower capacity.

The Albuquerque, N. M., Electric Light & Power Co. has set aside an appropriation of $40,000 for new mains and other equipment.

The Nicholas Bravo mine, Almoloya, Chih., Mex., will soon commence the installation of a producer gas power plant.

The Vassar Condensing Co., Vassar, Mich., is erecting a new plant and will be in the market for power and refrigerating machinery.

Bonds to the amount of $45,000 have been voted by Wagoner, Okla., for improvements to the water and lighting systems.

The board of education, London, O., is planning to install a central heating plant for the schools of that district. Estimated cost, $20,000.

Montgomery, Ala., will install electric compressors, etc., at the city pumping plant. Estimated cost, $16,000. A. R. Gilchrist is city engineer.

Somerville, Mass., contemplates the installation of a municipal electric lighting plant. E. W. Bailey is city engineer.

Kansas City, Mo., is in the market for a 175-kilowatt, 120-volt direct-current generator, direct connected to a 265-horsepower steam engine.

The Electric Light & Power Co., Aberdeen, S. Dak., is planning to install a new power plant at a cost of $200,000.

The board of water commissioners, Red Wing, Minn., is considering the installation of electrically driven pumping apparatus.

Coatesville, Ind., has voted in favor of a bond issue for the installation of an electric lighting system. Bids will soon be asked.

The L. E. White Lumber Co., Greenwood, Cal., will build a new electric power plant, comprising steam turbine, generator and boilers.

Anderson & Frankel, engineers,

Lexington, Ky., are preparing plans for a lighting system at Falmouth, Ky. A bond issue of $75,000 was recently voted for the purpose.

McDonald Bros. and W. D. Harmon, Rogersville, Tenn., are interested in a plan to erect a hydro-electric power plant on the Tennessee river, near Rogersville.

The Portland Railway, Light & Power Co., Portland, Ore., will expend about $1,500,000 this year on a substation and increases in its present generating capacity.

W. A. Foote, Lansing, Mich., president of the Commonwealth Power Co., announces that his corporation will build a new power plant at Battle Creek.

Heating and lighting plants are to be installed in the Tennessee insane hospital at Bolivar, Tenn. Bids are now being taken. The estimated cost of the new plant is $5,000.

A redrying plant is to be built at Shelbyville, Ky., by the American Tobacco Co., it is reported. A boiler and other equipment will be needed to operate the drying plant.

A bond issue of $15,000 has been voted by Wayzata, Minn., for the construction of a municipal electric lighting plant. A water system will also be installed.

The Arizona Copper Co. is planning numerous improvements to its properties. Included is the erection of a new power plant at Morenci, Ariz.

The board of public works, Anderson, Ind., is receiving bids for a new 1,500-horsepower turbine and other equipment for the lighting plant. Estimated cast, $40,000.

O. H. Ensign, electrical engineer of the United States reclamation service at Los Angeles, Cal., is preparing plans for new substations to be erected along the transmission system from Lehonton Dam to Fallon.

Murray, Ky., will begin the erection of a waterworks and an electric light plant in the immediate future, the Kentucky court of appeals having decided that the bond issue of the municipality for that purpose is valid.

The San Diego Consolidated Gas & Electric Co., San Diego, Cal., has announced that it will install a 3,000-kilowatt, horizontal, steam turbo-generator and 1,000 horsepower additional boiler capacity some time this year.

The Missouri Transmission Co. has been incorporated by S. W. Fordyce, J. H. Holiday and others to manufacture and distribute electricity in St. Louis and St. Charles counties, Mo. The company has offices in the Third National Bank building, St. Louis.

The Great Falls Power Co., is completing preparations for actual construction work on its hydro-electric plant at Caney Fork at Fall City, Tenn. A dam 110 feet high is to be erected. This is an H. M. Byllesby & Co. project.

P. M. Sharples, 40 South Clinton street, Chicago, is building a manufacturing building, 74 x 90 feet, four stories at Jefferson and Washington streets. It will cost about $150,000 and will be thoroughly equipped with elevators and power transmission machinery.

Mining equipment, as well as power machinery, will be needed in the near future by the Clover Fork Coal Co., Barbourville, Ky., which has been organized for the purpose of developing a tract of coal lands in southeastern Kentucky. The company is capitalized at $50,000. A. F. Whitfield is in charge.

Bids are going in for the equipment of a planing mill to be erected at Canton, O., by F. J. Berdel, Canton. The building will be of tile blocks, 33 x 70 feet, and two stories high. The equipment will include wood-working machinery, 10-horsepower electric motor, hangers, pulleys, shafting, etc.

The Warner Lake Irrigation Co., Portland, Ore., has filed specifications of its proposed intention to build a hydro-electric power plant on Upper Warner Lake, at Lakeview, Ore. Electric pumping plants and irrigation works will also be installed. The work is estimated to cost $3,000,000. W. K. Bradford is president of the company.

The Pacific Light & Power Co., Los Angeles, Cal., has filed a mortgage in favor of the United States Mortgage & Trust Co., New York, to secure a bond issue of $35,000,000. The company will appropriate $10,000,00 of such amount for the construction of its proposed hydro-electric power plant on Big Creek, Fresno county. Stone & Webster, Boston, are the engineers.

Formal announcement will be made shortly, it is expected, by H. M. Byllesby & Co., Chicago, that they will undertake the development of the water power project at Cumberland Falls, Ky., to which reference has previously been made. Surveys have been completed and it is understood that they show that the work can be profitably undertaken. The estimated cost of the development will be about $5,000,000.

Government News

Bids were opened Jan. 9 by the bureau of supplies and accounts, navy department, for furnishing materials and supplies for delivery at the stations named, as follows:

Schedule 4181, class 21, Washington, one turntable, 150 tons: American Bridge Co., Baltimore, $2,830; Baltimore Bridge Co., Baltimore, $1,495; Philadelphia Turntable Co., Newcastle, Del., $1,500; Wonham, Sanger & Bates, New York, $1,950; Penn Bridge Co., Beaver Falls, Pa., $2,590.

Schedule 4182, class 31, Brooklyn, one convertible steel plate fan, 6,000 cubic feet capacity, connected to 120-volt motor; spare parts: Deihl Mfg. Co., Elizabethport, N. J., $775; General Electric Co., Schenectady, N. Y., $875; B. F. Sturtevant & Co., Hyde Park, Mass., $808.

Schedule 4183, class 32, Philadelphia, one fresh water pump, motor driven. Blake & Knowles Steam Pump Co., New York, $595; Buffalo Steam Pump Co., Buffalo, $625; M. T. Davidson Co., Brooklyn, $1,025; Goulds Mfg. Co., New York, $650; Kent Mfg. Co., Baltimore, $639 and $624; Rumsey & Co., Seneca Falls, N. Y., $695; Platt Iron Works, trustees, Dayton, O., $610.

Schedule 4184, class 33, Charleston, S. C., one automatic knife grinder, motor driven: Frevert Mfg. Co., New York, $482; J. A. Fay & Egan Co., Cincinnati, $442.25; Kent Mfg. Co., Baltimore, $332.50 and $365.25; Manning, Maxwell & Moore, New York, $471.90; Oliver Mfg. Co., New York, $600; Jos. Ryerson & Sons, Chicago, $475.

Schedule 4185, class 34, Philadelphia, one bevel handsaw, motor driven: Frevert Mfg. Co., New York, $368; General Machinery Supply Co., New York, $1,709.50; Kent Mfg. Co., Baltimore, $1,295; T. Power & Co., Philadelphia, $2,450.

Class 35, do., one horizontal, automatic hollow chisel mortiser, with compound table, motor-driven: Bentel & Margedant Co., Hamilton, O., $675; J. A. Fay & Egan Co., Cincinnati, $687.75; Greenlee Bros. & Co., Rockford, Ill., $634.50; Manning, Maxwell & Moore, New York, $645, $638.10 and $720.60.

Schedule 4189, class 43, Washington, 1,500-ton Duff-Bethlehem forged steel, double-plunger pump, hydraulic jack; Chesapeake Supply Co., Washington, $420; C. F. Elms Engineering Co., Chicago, $622.50; Geo. S. Fowler, Washington, $331.20; R. W. Geldart, New York, $322; Kent Mfg. Co., Baltimore, $370; Watson, Stillman & Co., New York, $400.

Contracts have been awarded by bureau of supplies and accounts, navy department, for furnishing materials and supplies, delivered at the stations indicated, in accordance with the schedules enumerated, as follows:

Opening Oct. 31.

Schedule 3998, class 91, Philadelphia, two electric hoists, 2-ton: Hoisting Machinery Co., New York, $1,080.

Schedule 4005, class 121, Norfolk, one set pneumatic flanging clamps: Hilles & Jones Co., Williamton, Del., $1,080.

Class 122, Philadelphia, one rapid-action punch and riveter: Kemp Machinery Co., Baltimore, $1,030.

Opening Dec. 12.

Schedule 4701, class 1, Mare Island, one 20-ton four-motor, electric traveling crane with five-ton auxiliary hoist, Whiting Foundry & Equipment Co., Harvey, Ill., $5,895.

Schedule 4082, class 51, Pearl Harbor, Hawaii, one handpower traveling crane, 15-ton: Whiting Foundry & Equipment Co., Harvey, Ill., $1,787.

Schedule 4083, class 61, Charleston, one surface condenser: C. H. Wheeler Mfg. Co., Philadelphia, $1,786.

The isthmian canal commission will receive proposals to be opened Jan. pump, 14-inch suction, 12-inch disisthmus, one centrifugal 4,000-gallon 22, for furnishing, delivered at the charge, direct-connected with motor and mounted on truck, with necessary fittings.

New Buyers

The following manufacturing concerns have been incorporated recently:

Valley Implement & Vehicle Co., El Paso, Tex.; $40,000; by J. A. Smith, M. L. Cadwallader and A. G. Foster.

The United States Hatchet Wrench Co., Peoria, Ill.; $20,000; by George Rediger, Lewis Rediger and E. W. Oliver.

The Gridley Sheet Metal Works, Gridley, Ill.; $5,000; by George E. Wooddell, Roy C. Walker, F. M. Adams and H. S. Drumm.

Crescent Pump Works, Fort Worth, Tex.; $10,000; to manufacture pumps; by R. Vickery, W. W. Manning, G. E. Cranz and others.

St. Louis Nail & Supply Co., St. Louis; $50,000; by B. S. Manrz, L. H. Gunther and John R. Turner, all of 15 Exchange place, Jersey City, N. J.

Ohio Valley Pulley Works, Maysville, Ky.; $50,000; by E. P. Browning, S. P. Browning and Lewright Browning.

The Reuscher Mfg. Co., Toledo, O.; $35,000; to manufacture pipe-threading machinery; by Chas. A. Reuscher, Chas. C. Kester, John V. Newton, etc.

Illinois Oil Gas Heating Co., White Hall, Ill.; $50,000; to manufacture gas and other burners, stove heaters, etc.; by E. M. Prindle, Edward S. White, Geo. W. Prindle.

The Yankee Combination Nozzle Co., Cleveland; $10,000; to manufacture combination nozzles and all kinds of brass goods; by James H. McConkey, Francis J. French, W. M. Towle Jr., etc.

The Superior Welding & Machine Co., Inc., Stamford, Conn.; $13,000; to manufacture machinery and do a welding business; by Christopher D. Roehr, Louis Roehr and Christian F. Rittman.

The National Irrigation Water, Elevator & Power Co., Gary, Ind.; $50,000; to manufacture irrigation machinery; by Aristedes Valchis, Cort Valchis, Harry Awan and George Tamparys.

The Thorp Iron Co., Manhattan, New York City; $30,000; to manufacture and deal in structural iron work, etc.; by Adolph H. Fisher, 129 West Seventieth street, New York City; Charles H. Parsons, 236 Washington avenue, Brooklyn.

The F. H. Muller Hose Coupler Co., Buffalo; $100,000; to manufacture hose couplers, metal articles, etc.; by Frank X. Muller, 26 Lyth avenue; Joseph Bronold, 1335 Jeff street; Crescentis Hurley, 70 Landon street, Buffalo.

The Brown-Collins Gas Engine Co., Hartford, Conn.; $50,000; to manufacture gas engines; by president and treasurer, F. S. Collins; vice president and general manager, Benjamin F. Brown; secretary, Clarence W. Seymour.

The Bennett Mfg. Co., Boston; $150,000; to manufacture metals of all kinds; by Ernest L. Shubert, Auburndale; Fred L. Drew, 69 Pinkney street, Boston; Edgar M. Parker, 86 Howard street, Waltham; Thomas F. Sheldon, 97 Milk street, Boston.

The Ozone Engineering Co., Philadelphia; $5,000; to make and sell ozonizer and general electrical devices; mechanical engineers; by Louis F. Bruce, Tenth and Clinton streets, Philadelphia; Russell Spaulding, 226 Central Park, New York; Jacob Liffman, 2742 North Twelfth street, Philadelphia.

The Atlas Still Mfg. Co., Manhattan, New York City; $300,000; to manufacture stills, boilers, condensers, etc.; manufacture and deal in distilling and condensing apparatus; by Max M. Kotzen, 237 West 100th street; Jacob Lichtenstein, 995 Union avenue, Bronx; Ralph H. Raphael, 520 West 122nd street, New York City.

General Industrial

The Cook Mfg. Co., Albion, Mich., is involved in the failure of the Albion National Bank. P. M. Dearing, manager of the company, is a son of Cashier H. M. Dearing, and both are under arrest on the charge that forgeries in excess of $150,000 were committed in an effort to keep the manufacturing concern going. Gasoline engines and farm tools were made.

A consolidation of the Stiles Mfg. Co., Parkersburg, W. Va., and the Miami Valley Machine Tool Co., Dayton, O., is under way, the new concern to be known as the Miami Machine Co. Engine lathes, drill presses, wood working machinery, grinders and belt-sanding machinery will be manufactured, and a large foundry and machine shop will be operated. No new machinery will be needed in the reorganization.

Trade Notes

The Standard Steel Works Co., Philadelphia, has opened a branch office in the First National Bank building, Denver.

The American Brake Shoe & Foundry Co. has recently acquired the exclusive right for the United States and Canada to manufacture brake shoes by the process controlled by the Custer Sandless Casting Co., Philadelphia. The Custer company has also closed a contract whereby the Pennsylvania Steel Co. acquires the exclusive right to manufacture cast iron and manganese steel track accessories by the Custer process.

Fires

Fire recently partially destroyed the machine shop of the Johnson Gear Co., San Francisco.

Fire at the plant of the Eureka Stove Works, Birmingham, Ala., caused a loss of about $15,000.

Fire recently damaged the forge room of the Warner Mfg. Co., Greenfield, Mass., manufacturer of gears, etc. The loss was about $5,000.

The plant of the Buffalo Sheet Metal Works, Buffalo, N. Y., manufacturer of ventilating systems, was damaged to the extent of $10,000 by a recent fire.

Fire recently caused a loss of $100,000 to the plant of the National Manufacturing Co., Minneapolis, manufacturer of brass and plumbing supplies.

Heavy damage was caused by a fire at the plant of the Gibbes Machinery Co., Columbia, S. C. The loss included 18 or 20 automobiles which were stored in the motor department.

A pattern storage house at the works of the Maryland Steel Co., Sparrow's Point, Md., was badly damaged by fire, Dec. 28, the loss being estimated at approximately $100,000. The fire did not affect the plant operations.